

CONSERVATION FOR Family and Consumer Sciences



INSTRUCTIONAL UNIT

CONSERVATION FOR FAMILY AND CONSUMER SCIENCES

Author: Elaine Callaway
Conservation Education Consultant

Editors: Martha Daniels, Ginger Gray

Photos and Illustrations:
David Besenger, Martha Daniels, Lisa Herigon,
Mark Raithel, Jim Rathert, Kim Watson, Cliff White

Cover Photo: Cliff White

Design: Martha Daniels, Lisa Herigon

Show-Me Standards Crosswalks:
Ethel Barton, Lila Chapman
Rolla Junior High School

Review Teachers

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Elaine Callaway

Cheryl Adams	Diane Frey
Ethel Burton	Marlis King
Betty Christman	Mary Lee Meyer
Carolyn Gildehaus	Dixie Morgan
Lila Chapman	Carol Phares
Connie Hoffman	Regina Rainey
Julie Holloway	Carol Smith
Jayla Smith	Julie Short

Department of Elementary and Secondary Education Supervisors
Audrey Eberlin - retired
Deborah Pohl

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How to Use This Instructional Unit

Conservation for Family and Consumer Sciences is designed to assist family and consumer science teachers with integrating conservation concepts and understandings into their curricular areas. It includes many concepts already covered in the classroom. This unit extends the conservation message beyond the preservationist stage and represents conservation as an encompassing theme throughout the family and consumer sciences curricular areas.

The lesson plans, accompanied by suggested teaching methods, activities and audio-visual aids, are designed for use with middle school through high school students. Provided in general format, without time constraints, the plans should be modified in content to meet the needs of the students, class and teaching objectives. Objectives are listed for the unit in general and more specifically in each lesson.

Lessons have been cross-walked with the *Missouri Show-Me Standards*. In addition, transparency masters, assignment sheets, job sheets and student handouts are included. A special effort was made to avoid duplication of materials existing within the Family and Consumer Sciences Frameworks. Point values for student assignments are left to the discretion of the individual teacher.

Introduction

Many, if not most, Americans realize that the Earth's resources are limited. Publicity surrounding environmental issues has motivated many citizens to actively seek alternatives to wasteful use of natural resources. Homemakers are concerned. They realize that conservation has a direct and positive effect on the home, community, country, planet and quality of life for every individual. However, the best intentions will be short-lived without a background and understanding of the principles that govern resource use and abuse.

The purpose of this instructional unit is to provide family and consumer sciences teachers with a sound base to incorporate conservation of natural resources into their existing programs, thus enhancing environmentally-based decisions by future homemakers.

Homemaking today requires the energy, knowledge and skill to establish a healthy, happy, livable environment—indoors and out. Natural resources are necessary to provide for the needs and wants of individuals, so how they are used is vital to the health and well-being of society and the environment.

Providing information and examples of environmentally responsible behaviors is the role of every teacher, but perhaps most importantly, that of the family and consumer science instructor. Carelessness, ignorance and greed are the antithesis of conservation. Overcoming such behaviors is not easy but they can be changed through effective education. There are no easy answers but there are three distinct efforts which can be demonstrated. First, set a good example in your own personal use of resources. Second, provide experiences which will enable youngsters to observe, both positive and negative, examples of resource use and make comparisons. Third, provide accurate, factual information untainted by emotional inferences while recognizing that those emotions play an important role in the character of the individual.

Preparing students to take on the challenges of the world while providing a quality life for themselves and their families is one of the most necessary and rewarding endeavors. Family and consumer science classes provide a link to the real world beyond the school years. The attitudes established now will be the catalysts which inspire future citizens to become true conservationists.

OBJECTIVES

The general objectives of this instructional unit are that each student should be able to:

1. Differentiate between the preservation, restoration and management levels of conservation.
2. Define and give examples of renewable and nonrenewable natural resources.
3. Describe how lifestyles and conservation behaviors affect the use and availability of natural resources.
4. Conduct at least one nature-related activity for children.
5. Compare the advantages and disadvantages of natural and synthetic textiles.
6. Identify conservation measures and environmental impacts when purchasing or disposing of goods.
7. Design a home system for separating household wastes to maximize recycling potential and reduce solid waste.
8. Plan a meal that includes a game animal (meat, fish or fowl) as part of the menu.
9. Design a landscape plan that would provide wildlife habitat and attract small wildlife (birds, butterflies, small mammals, etc.) to their neighborhood or yard.
10. Recognize the importance of considering conservation as a part of all homemaking tasks.



MARK RAITHEL



LISA HERIGON

Conservation Connections

*for Family and Consumer
Sciences*

CONSERVATION CONNECTIONS

Learner Expectation:

Students will differentiate between the preservation, restoration and management levels of conservation; define and give examples of renewable and non-renewable natural resources and describe how lifestyles and conservation behaviors affect the use and availability of natural resources.

[illegible]

Conservation and Homemaking

Conserving natural resources is the responsibility of every individual. Natural resources such as soil, air, water, minerals, wildlife and plants are important to homemaking and human survival because they supply all our needs and wants. Conservation can also contribute to the prosperity of the home through skills to avoid waste and enhance values.

Meaning of Conservation

One of the most popular definitions of conservation is “the wise use of natural resources.” This is sometimes expanded to add “without waste to ensure continued, long-term availability of the resource.” Whatever definition is chosen, conservation is actually a pattern of human behavior with respect to the environment.

Homemaker's Role

Homemakers play an important role in conservation through their cumulative actions. As consumers and decision-makers, they significantly impact the way natural resources are used. Although renters and homeowners have some differences in responsibilities, based on their situations, all homemakers are responsible for their immediate living conditions and surroundings. They select food, clothing, housing and other consumer products and services. They maintain their homes and grounds. They transfer values and knowledge to their children. It is vital that homemakers develop the knowledge, awareness and concern for the environment that will lead them to act in an environmentally responsible manner. For conservation to be effective as a homemaking tool it must become a philosophy of daily living. For conservation to succeed on a global scale, it must begin in the home.



DAVID BESENGER

Conservation contributes to the prosperity of the home.

Environmental Impacts

People affect the environment by the way they live and the choices they make, impacting the availability of natural resources. Making a decision involves many parameters, including the evaluation of personal goals, resources and actions. Knowledge, attitudes and values also play an important part in the day-to-day decisions which impact the environment.

It is easy to overlook the environmental effects of our daily, routine decisions. In some instances, it may take time for cumulative impacts to materialize. In others, the impact has already occurred or is far removed from the person making the decision. The out-of-sight-out-of-mind attitude implies that everything is fine, even when there are catastrophic ramifications elsewhere. This attitude should be replaced by one

that advocates, “Everything is connected to everything else.” With this philosophy in place, consumers are better able to weigh the environmental impacts when making decisions regarding products or services, and then make choices consistent with a conservation philosophy.

Conservation Practices

The word conservation implies that the resource is not wasted. If homemakers avoid wasteful practices they will save money, as well as natural resources. There are many excellent articles and books that list helpful hints and ways to save the earth. Some rules to keep in mind include the following:

Rethink
Reduce
Reuse
Recycle

1. There is no “away”—everything must go somewhere.
2. There is no such thing as a free lunch—you can’t get something for nothing.
3. Everything is connected to everything else—the trick is in figuring out how.

Another set of ideas constitutes the four Rs—rethink, reduce, reuse, recycle. Rethink which goods and services are actually necessary and reduce those items that are not. Reuse materials to extend their usefulness (may be a non-traditional or creative use). Recycle as much as possible. Perhaps a fifth R should be added—remember to apply the other Rs when shopping for goods and services.

Conservation and Economics

HOUSEHOLD TIPS

Polish your furniture with one part lemon juice and two parts olive or vegetable oil.

Clean your toilets with baking soda and a mild soap.

Replace mothballs with cedar chips.

Clean windows and mirrors with a mixture of white vinegar and warm water. Rinse with water and dry with a soft towel.

Everyone has a stake in the economics of conservation. It is not simply an industrial or agricultural dilemma beyond the influence of the home-maker. Our economic system begins in the home, via the demands of individual consumers. Each person contributes to what is produced, how it is produced and what environmental impacts are acceptable.

Our economy is based on the use of natural resources. In the long run, sound conservation practices will also produce sound economic conditions. For example, protecting and conserving rain forests assures that their products will be available long into the future. Soil conservation practices, which prevent erosion and protect fertility, maintain soil productivity and reduce the need for expensive fertilizers.

Short-term economic gains may seem to be beneficial, often providing goods and jobs, but the benefits are usually short-lived if conservation measures are not taken to foster the continued production or careful use of the resource. Farming methods which allow erosion will



Our economy is based on the use of natural resources, such as trees.

reduce fertility and require increased expenses for fertilizers to maintain productivity. In another example, both spotted owls and loggers are dependent on old-growth forests. Destruction of the forest negatively affects both parties in the long run by decreasing the economic potential and reducing the number of nesting sights. Supporting conservation practices which preserve and manage the forest will benefit both owls and loggers in the long run.

In the home, conservation practices provide immediate as well as long-term economic benefits. Recycling not only reduces waste, but in some instances can provide a moderate source of income as well. Conserving water and energy help stretch the family budget. Proper construction, landscaping and maintenance increase the value of the home and reduce the need for expensive repairs and corrections.

Resource Values

Natural resources provide the necessities (and the luxuries) for life. The amount of natural resources available contributes to the wealth of a country. The use of those natural resources determines a country's economic stability. Countries rich in natural resources are generally powerful and afford a high standard of living. Recognizing resource values and practicing conservation stretches the home budget, maximizes the value of the resources used and improves the quality of the home and the community.

Resource Waste

Poor countries cannot afford the luxury of waste. Too much is at stake, sometimes even life itself, if resources are wasted or used unwisely. In some desert countries, even animal dung is retrieved to use as cooking fuel.

In wealthy countries, squandering resources can lead to a reduced standard of living and potential collapse of the economy. Such was the case during the dust bowl days of the 1930s. Thus, it is essential that natural resources be safeguarded so they can continue to supply those things we need and want.



Bats reproduce very slowly, having only one young per summer.

Renewable Versus Nonrenewable Resources

Renewable resources are those which are capable of regenerating themselves over a fairly short span of time. Obviously, plants and animals fall into this category. Virtually all living things will renew themselves over time if conditions are favorable. If population numbers are reduced to a minimum or habitats are destroyed beyond restoration, conditions are unfavorable. Few organisms survive even if reproduction occurs. When this happens a renewable resource becomes nonrenewable and threatened. This is often the case of endangered species.

HOUSEHOLD TIPS

Replace abrasive cleaners by using half a lemon dipped in borax to scrub away spots.

Freshen your air with an open bowl of vinegar.

Use a mixture of vinegar, water and salt to replace ammonia.

Sprinkle cornstarch on your carpets and let set for an hour then vacuum to replace commercial carpet cleaners.

Nonliving resources considered to be renewable are those which have cycles of renewability such as fresh air, fresh water and fertile soil.

Nonrenewable resources are those which are available only in a fixed supply. These resources do not replenish themselves through natural processes or are replenished so slowly that they are not considered renewable. Fossil fuels are nonrenewable because they take hundreds of millions of years to develop. Other nonrenewable resources include metallic minerals (such as copper, aluminum and iron) and nonmetallic minerals (such as phosphates, potassium used in soil fertilizers, sand, clay and gravel).

Sunlight, wind, tides and flowing water are considered perpetual resources because they come from an essentially inexhaustible source and will always be available regardless of how they are used.

Levels of Conservation

There are three levels of conservation effort briefly discussed here.

1. *Preservation*

Preservation is to protect a resource by not using it. In some instances, such as protection of endangered species, preservation is the only possible method of conserving the resource.

2. *Restoration*

Restoration involves bringing back or re-establishing a resource that has been destroyed or abused.

Developing and replenishing habitat and the subsequent introduction and restocking of wildlife in an area is an example of this level of conservation.

3. *Management*

Management of the resource means controlling its use within the framework of conservation goals. Using the definition of conservation developed earlier, managing an established wildlife species might entail controlling harvest or manipulating the habitat to provide sustainable conditions or a combination of both.

CONSERVATION CONNECTIONS

MATERIALS

Tarnished silver knife or spoon
Silver polish
Cleaning cloth
Container for water
Jar of strawberry or other fruit preserves
Loaf of bread
Assignment Sheet 1
Overhead projector
Transparency Masters 1-4

OBJECTIVES

After completing this lesson the student should be able to:

1. Describe the relationship between homemaking and conservation.
2. List the four Rs of waste reduction and give examples of how these actions decrease waste.
3. Define conservation and natural resources.
4. Classify natural resources as renewable or nonrenewable.
5. Distinguish levels of conservation as either preservation, restoration or management.

METHOD

Demonstration
Illustrated lecture
Discussion

PROCEDURE

I. Introduction

- A. Conservation is everyone's business, especially the homemaker's.
 1. Decisions affect the environment.
 2. Impact is often indirect to the person making the decision (such as landfill leachates, chlordane runoff).
 3. Some impacts take time to materialize (such as environmentally induced cancers caused by long-term, low-dose exposures).
- B. Decisions should be consistent with conservation philosophy.

II. Presentation

- A. What is conservation?
 1. Wise use of natural resources.
 2. Not wasting resources so they will be available to meet needs and wants.
 3. Philosophy of daily living.
- B. Summarize the Rs of waste reduction using **Transparency Master 1**.
 1. Have students complete **Assignment Sheet 1**.
- C. What are natural resources?
 1. Things in nature used to meet needs and wants.
 2. Renewable—replenished over relatively short time (such as plants and animals, fresh air, fresh water and fertile soil).
 3. Nonrenewable resources—available only in fixed supply. (Examples are fossil fuels, metals and minerals.)
 4. Perpetual resources—derive from inexhaustible sources (such as sunlight, wind, tides and flowing water).
 5. Point to various objects in the room and have students tell whether the objects are renewable, nonrenewable or perpetual resources.
 6. Complete **Assignment Sheet 2** (or provide as homework or a review).
- D. Demonstrate and give examples of the “Levels of Conservation Effort.”

LESSON PLAN I

CONSERVATION FOR FAMILY AND CONSUMER SCIENCES

1. Preservation: Saving the resource by not using it.
 - a. Show the tarnished silver utensil. Point out that it has been saved but not used for some time. Also show the fruit preserves and state that they are currently in a state of preservation.
 - b. Give an example of an endangered species as a biological component of preservation. The resource is protected but not used (**Transparency Master 2**).
2. Restoration: Returning (or attempting to return) the resource to its original condition.
 - a. Polish the utensil until it shows its original brilliance.
 - b. Open the jar of preserves. Point out that it will not have the same quality as the original fresh fruit.
 - c. Restoration programs in nature include Missouri deer, turkey, otter, plant communities, river banks and others. Display **Transparency Master 3**. Point out that a species is seldom restored without habitat protection and even then it is difficult to attain the original conditions (like the preserves).
3. Management: Developing and controlling the use of the resource without waste.
 - a. Spread the fruit preserves on a slice of bread using the utensil just restored. (Spread large and small amounts on two slices to demonstrate waste and frugality.)
 - b. Managing wildlife might involve controlling the amount of harvest and/or manipulating habitat (**Transparency Master 4**).

III. Summary

- A. Conservation involves the most good for the most people for the longest time.
 1. Share the bread and preserves with the class.
 2. Review the role of each person in the overall conservation of natural resources.
- B. Have students generate ideas how each could be a better conservationist.

Name: _____
Point Value: _____
Points Earned: _____



THE FOUR Rs

Give examples of how the following actions can help decrease waste.

1. RETHINK

2. REDUCE

3. REUSE

4. RECYCLE

Name: _____

Point Value: _____

Points Earned: _____

Classifying Natural Resources

Classify the following according to whether they are (or are made from):

R = renewable natural resources

N = nonrenewable natural resources

P = perpetual natural resources

_____ books

_____ newspapers

_____ gold jewelry

_____ phosphate detergent

_____ gasoline

_____ fur coat

_____ wind

_____ rag rug

_____ computer diskette

_____ wooden clothes pin

_____ sunlight

_____ metal filing cabinet

_____ cotton shirt

_____ fake fur

_____ leather shoes

_____ flowing water

_____ aluminum can

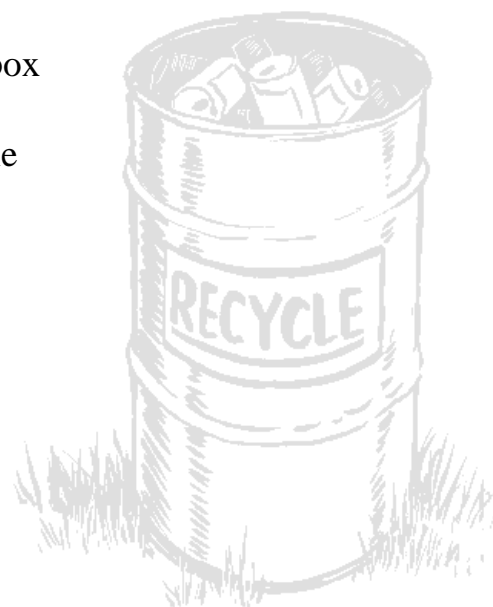
_____ cardboard box

_____ fertile soil

_____ plastic bottle

Go through the list again and circle the items that can be recycled.

Bonus: Go through the list and underline those that can be composted.



R-R-R-R-RIGHT!

RETHINK

what goods, services and packaging
you need.

REDUCE

those that aren't needed.

REUSE

items to extend their usefulness.

RECYCLE

as much as possible.

REMEMBER

to apply the other **Rs**
when selecting goods and services.

Preservation



Snowy Egret
Rare Animal



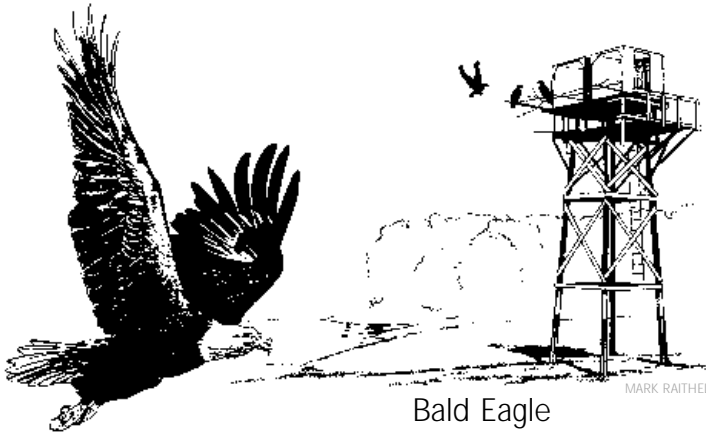
Mead's Milkweed
Rare Plant



MARTHA DANIELS

Missouri Natural Area

Restoration



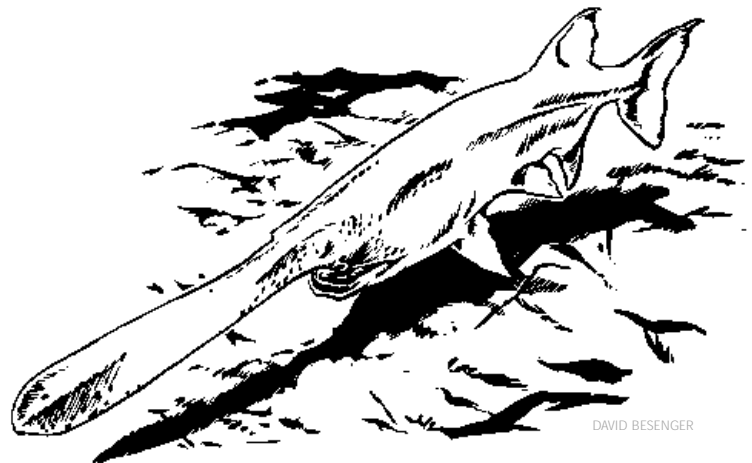
Bald Eagle
Release Tower



Planting Trees



River Otter
Released to Wild



Paddlefish
Released to Rivers

Management



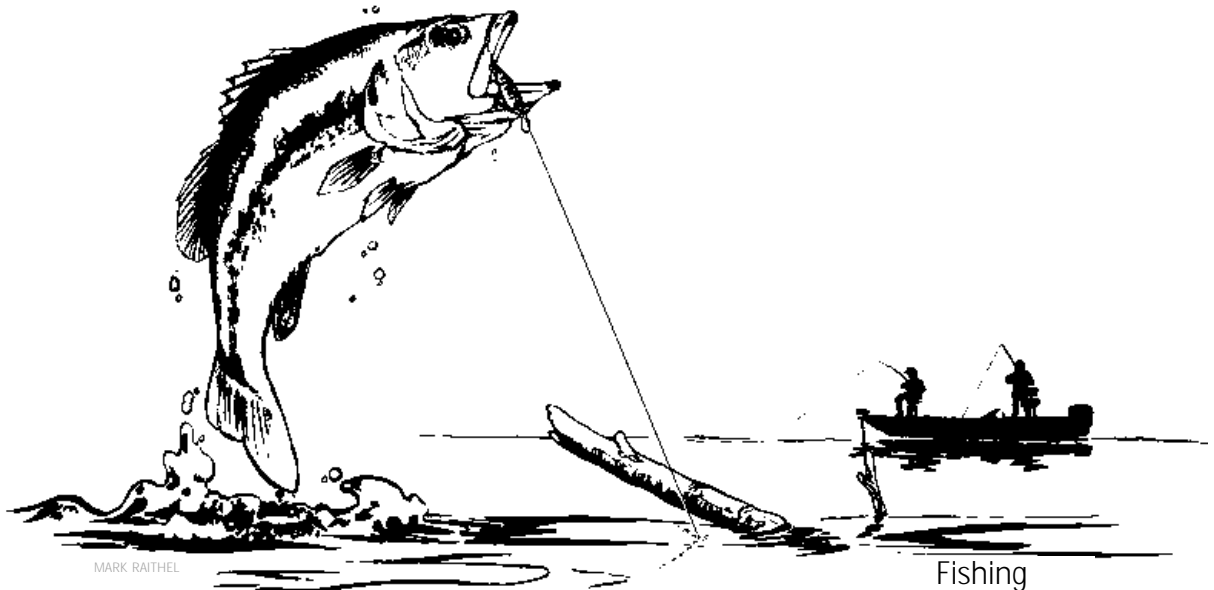
DAVID BESENGER

Harvesting Trees



DAVID BESENGER

Hunting



MARK RAITHEL

Fishing



PAUL CHILDRESS

Family and Consumer Resource Management

FAMILY AND CONSUMER RESOURCE MANAGEMENT

Learner Expectation:

Students will design a home system for separating household wastes to maximize recycling potential and reduce solid waste.

CHAPTER STANDARDS		PERFORMANCE OBJECTIVES	ACTIVITIES	IDEAS
Performance	Knowledge			
1.1	CA1	1. Trace the origin of a natural resource through a resource chain pathway.	Assignment Sheet 3. Resource Chains	@ Have students calculate how many diapers a child uses from birth to 2 years. If the diapers are all disposable, how much space would they consume in a landfill?
1.2	CA3			
1.4	CA4	2. Describe how lifestyles and conservation habits affect the use and availability of natural resources.	Job Sheet 2. When Resources Are Rare	Use research sources and find out how many years it takes for the disposable diapers to decompose.
1.5	CA5			
2.1	CA6			
2.2	MA1			
2.3	SC8	3. Identify three concerns associated with the acquisition and disposal of goods.	Transparency Masters 5. Resource Chain for Aluminum 6. Methods of Disposal	
3.1	SS4			
3.2				
3.3				
3.4		4. Name four ways to dispose of goods and list the advantages and/or disadvantages of each.	Activity Cards Resource Chain for Aluminum (12 cards)	
3.6				
3.7				
3.8				
4.1				
4.2				
4.3				
4.4				
4.5				
4.6				
4.7				

Consumers and Conservation

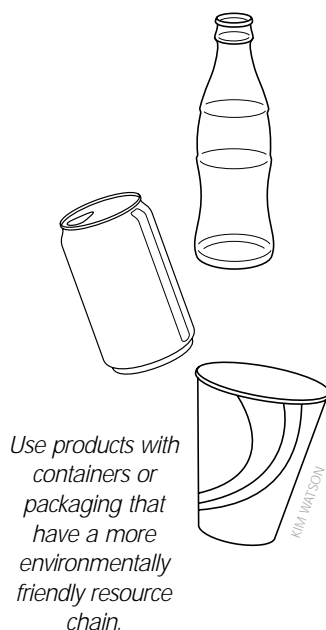
Homemakers affect the environment when they purchase, use and dispose of goods. Most homemakers want the greatest use out of the products they purchase, but they also want convenience and a low price. These characteristics are seldom found in the same product. High-quality, durable goods usually cost more than disposable ones and require more maintenance. A conservation ethic promotes the wise use of natural resources without waste, providing a perpetual supply and promoting a stronger economy.

Resource Chain

A resource chain depicts the pathway traveled by a natural resource through the location, manufacturing, transportation, use and disposal of a product. For example, aluminum foil may have gone through the following stages:

1. mining the mineral bauxite,
2. travel by truck or rail to a loading area,
3. shipping by cargo ship to a processing plant,
4. heating and refining into metallic aluminum,
5. boxing in light cardboard boxes with a steel blade attached (each of which have resource chains of their own),
6. shipping to the supermarket,
7. purchase by a consumer (who traveled to the supermarket),
8. use in heating a baked potato in the oven,
9. discard in the trash,
10. pick up by sanitation truck,
11. haul to a landfill and
12. bury.

The resource chain of a product must be considered along with the product price to determine the full value and impact of a product. Starting and ending with a recycled aluminum product would alter the chain and result in a more conservation-minded regime.



Obtaining Goods

A conservation ethic dictates a set of standards for consumer products. Products that are durable, reusable, repairable and recyclable are generally more compatible with this ethic by using an environmentally friendly resource chain. During the purchase process, consumers should compare these qualities for the items they intend to buy.

Durability

In the post-World War II years, disposability (rather than durability) became the status symbol of affluence in the American economy. In the 1990s, disposability has become a paradox for many consumers who want to be environmentally astute but have grown up with the convenience of throw-aways. Many of today's products are considered disposable when their useful lives are over. Cheap parts and rising labor costs have made it easier to discard and replace items rather than to have them fixed.

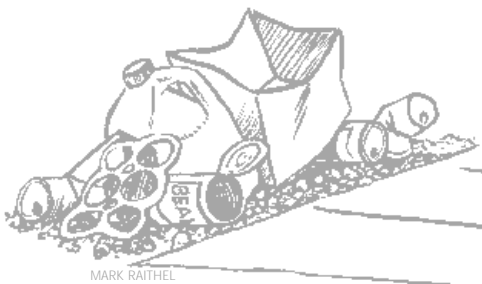
Society needs to change its standards to stress the need for conservation through the products it chooses to buy. A return to the durability and repair ethic of the past, coupled with an attitude of recycling and reusing products, is one way to create a conservation ethic in consumer products and goods.

Advertising Claims

Advertising is used to inform and persuade a consumer to buy a product or service. Nine out of ten Americans report that they shop with the environment in mind, but this is easier said than done. Consumers are faced with overwhelming and often misleading advertising concerning the environmental safety of products. Terms such as biodegradable, natural, and environmentally safe may take on different meanings and consequences when they are used by advertisers to refer to different products. No standards or legal definitions exist to determine when a manufacturer may use these labels. For example, biodegradable products require oxygen for the materials to break down. But when put in a landfill and sealed away from air, little if any degradation occurs. On the other hand, phosphates in cleaning products are biodegradable but break down so quickly that they have the potential to produce algal blooms and degrade water resources. Thus, understanding and applying basic ecological principles is an important tool for finding and purchasing environmentally friendly products.

First Law of Thermodynamics:

Matter and energy can neither be created or destroyed, but can be converted from one form to another.



Disposing of Goods

A variety of reasons may lead to the disposal of a product. It may no longer be usable or useful to the consumer, it may be designed for single or short-term use, it may be broken or it may be simply out of style. Whatever the reason for throwing an item away, the item is bound by the first Law of Thermodynamics:

Matter and energy can neither be created or destroyed but can be converted from one form to another.

Simply put, everything must go somewhere or there is no away in throw-away.

Landfills

By the year 2000, Americans will be producing nearly 200 million tons of solid waste annually. As landfills reach capacity or fail to meet operating standards, many are being closed. The Missouri Solid Waste Bill (SB 530) prohibits disposal of lead acid batteries, whole tires and yard wastes in landfills. The bill also addresses other aspects of solid waste management with the overall goal of reducing the volume of solid waste 40 percent by 1998, through integrated solid waste management techniques.



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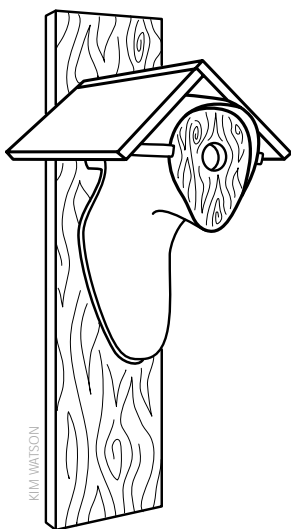
Recycling paper, glass, plastics, aluminum and steel gives new life to old containers.

Everyone is responsible for reducing the amount of material going into landfills. Individuals can deal with this problem, most effectively, in the home. Recycling significantly reduces the burden on landfills. In addition, when consumers choose a product that creates less waste, has a long useful life and offers an agreeable means of disposal or reuse, solid waste problems can be reduced. Evaluating the product and its packaging for potential recycling or disposal during the buying process will help extend the life of landfills.

Recycling

Recyclable materials should not end up in already overcrowded landfills; however, not all products can be recycled. Consumers with an eye to the future will select those products that are recyclable or contain components made from recycled materials. The term recyclable is found on many products, but is only valuable as a product characteristic when the consumer follows through and actually recycles it.

Reusing items, such as this boot transformed into a bluebird house, reduces the amount of household trash.



KIM WATSON

Recycling paper has a double benefit. First, it significantly reduces the demand for landfill space. Second, it also reduces the number of trees necessary to produce paper products. Even recycled paper products must contain some virgin wood fibers, since paper fibers wear down during the manufacturing process, becoming smaller and less capable of binding together. Using recycled paper reduces the number of trees needed to produce new paper and, an equally important benefit, reduces the burden on landfills. Minimizing the need for additional landfill space could deter destruction of forest habitat.

Reuse

Reusing materials (natural resources) is different from recycling in that the product is used in a new way or remodeled to provide a different benefit. It is easy to see how clothing and accessories could be altered to provide new life to a wardrobe, but some other household products are also interesting to redesign. Several good books exist which provide ideas for reusing everything from antifreeze jugs to pairs of pantihose. Any time items are reused, it decreases the trash output of the household.

Other Methods

Approximately 13 percent of the United States' waste is burned, and the use of incineration as a waste disposal method is increasing, according to "Who's Responsible for This Mess?" (Dow Chemical Company). Burning trash to reduce volume is an old practice that currently uses state-of-the-art emission control technology to make it a safe disposal method, even under tough air quality standards.

One concern still to be addressed is the toxicity and proper disposal of the ash from the incineration. The answer may lie in using biodegradable products which contain fewer toxic chemicals. It is up to the consumer to be aware of and select these products.

Composting is another alternative for eliminating biodegradable wastes. It is being tested by some municipalities, especially for use with leaves and yard wastes. It can also be practiced in the household and is covered in detail in a later section.

LESSON PLAN II

CONSERVATION FOR FAMILY AND CONSUMER SCIENCES

FAMILY AND CONSUMER RESOURCES–Conservation Benefits

MATERIALS

Several items which have a range of disposability (i.e. newspaper, food, disposable ink pen, aluminum can, battery, toy, necktie, variable plastic containers, recycled and recyclable items)

Transparency Masters 5 and 6
Assignment Sheet 3

Job Sheet 1

Resource Chain Cards

OBJECTIVES

After completing this lesson the student should be able to:

1. Trace the origin of a natural resource through a resource chain pathway.
2. Describe how lifestyles and conservation habits affect the use and availability of natural resources.
3. Identify three concerns associated with the acquisition and disposal of goods.
4. Name four ways to dispose of goods and list the advantages or disadvantages of each.

METHOD

Illustrated lecture

Demonstration

Performance activity

PROCEDURE

I. Introduction

- A. Homemakers affect the environment by the decisions they make.
 1. Desire greatest use from product
 2. Want convenience and low price
- B. Conservation ethic promotes wise use to balance sustained use and economic value.

II. Presentation

- A. Display several items which have a range of disposability. (See materials list.)
 1. Have students speculate the origins of the items.
 2. Have students discuss what might happen to the items when they are no longer useful.
 3. Discuss characteristics of products which exhibit a conservation awareness.
 - a. Durable
 - b. Repairable
 - c. Reusable
 - d. Recyclable
- B. Resource Chain Activities
 1. Hand out **Resource Chain Cards**.
 - a. Have students try to line up, in order, from aluminum extraction to disposal.
 - b. Show **Transparency Master 5** and discuss the steps.
 - c. Now ask students what will happen to the chain if we recycle. (Only steps 4-8 should remain.)
 2. Have students complete **Assignment Sheet 3**.
 3. Discuss ways to improve the conservation ethic for consumers.
 - a. Improve durability and repair
 - b. Recycling and reusing products
- C. Discuss reasons for product disposal.
 1. No longer useful or usable
 2. Designed for single or short-term use
 3. First Law of Thermodynamics applies
 - a. Matter and energy can be neither created nor destroyed.
 - b. Everything must go somewhere.
 - c. There is no “away.”
- D. Show **Transparency Master 6** and describe methods of disposal.
 1. Landfills
 2. Recycling
 3. Reusing
 4. Other

III. Summary

- A. Have students complete **Job Sheet 1**.
- B. Have students discuss whether such conditions could happen (or are happening again) and how students might handle living with limited resources.

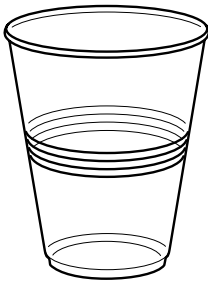
Name: _____

Point Value: _____

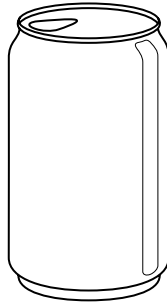
Points Earned: _____

RESOURCE CHAINS

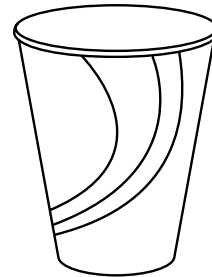
Select one of the following products and trace the resource chain to its origin as a natural resource.



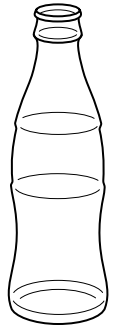
A) Plastic cup



B) Aluminum can



C) Paper cup



D) Glass bottle

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BONUS: Describe how recycling changes the resource chain.

Name: _____

Point Value: _____

Points Earned: _____

WHEN RESOURCES ARE RARE

Interview someone who lived during the Great Depression or World War II who can tell stories about life during a time when natural resources were limited. Record the information either in writing or on audio or video tape. (Be sure to ask permission first.) Make a list of questions to ask. The following are suggestions to get you started.

1. Do you remember when a lack of resources affected your daily living?

2. How did you feel during that time?

3. What were the advantages and disadvantages of the situation?

4. What advice would you like to give to young people today regarding a similar situation?

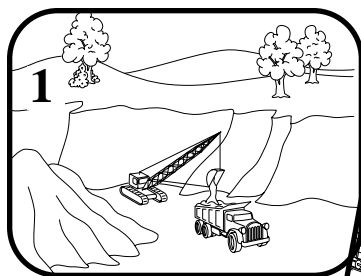
Write your own questions to enhance the interview.

5. _____

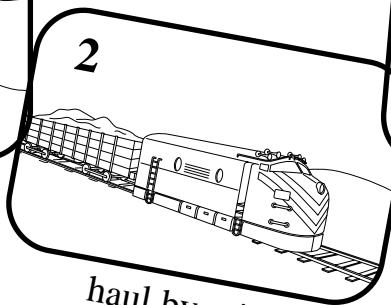
6. _____

7. _____

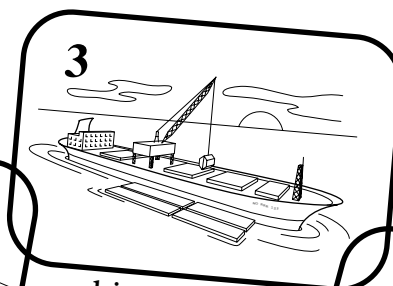
8. _____



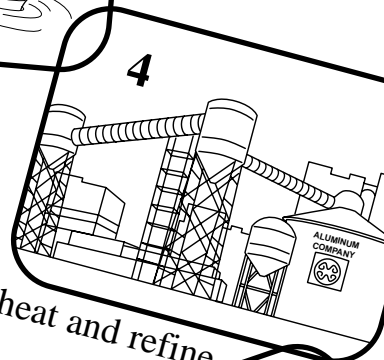
mining bauxite



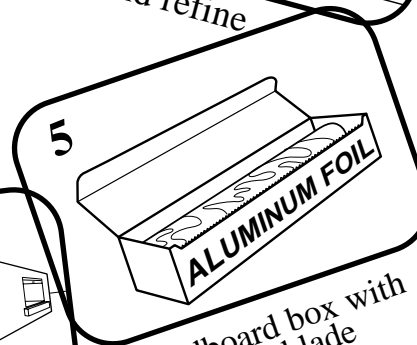
haul by rail



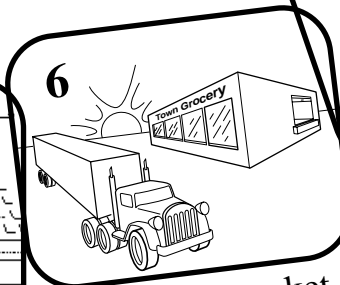
ship to plant



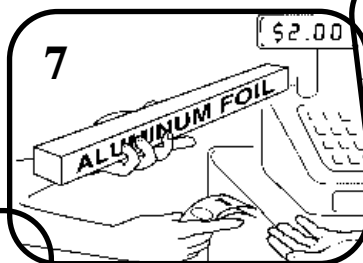
heat and refine



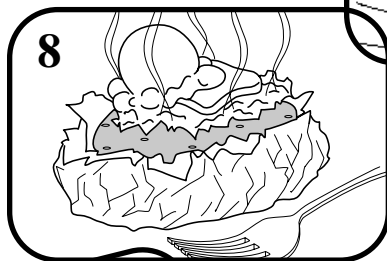
cardboard box with steel blade



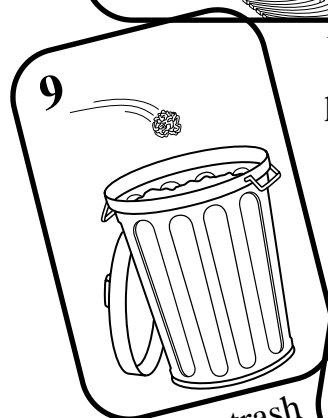
truck to market



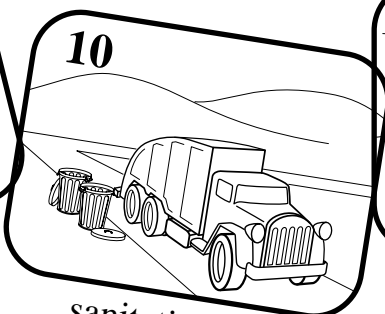
purchase by consumer



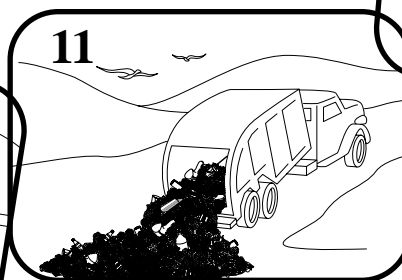
use to bake potato



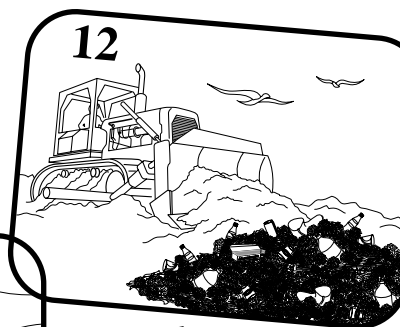
throw in trash



sanitation crew removes



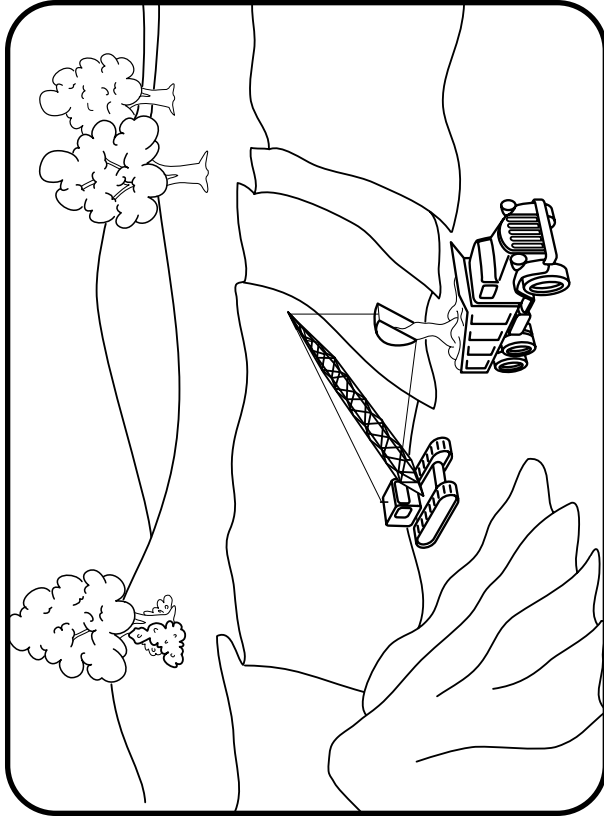
haul to landfill



bury

Resource Chain for Aluminum

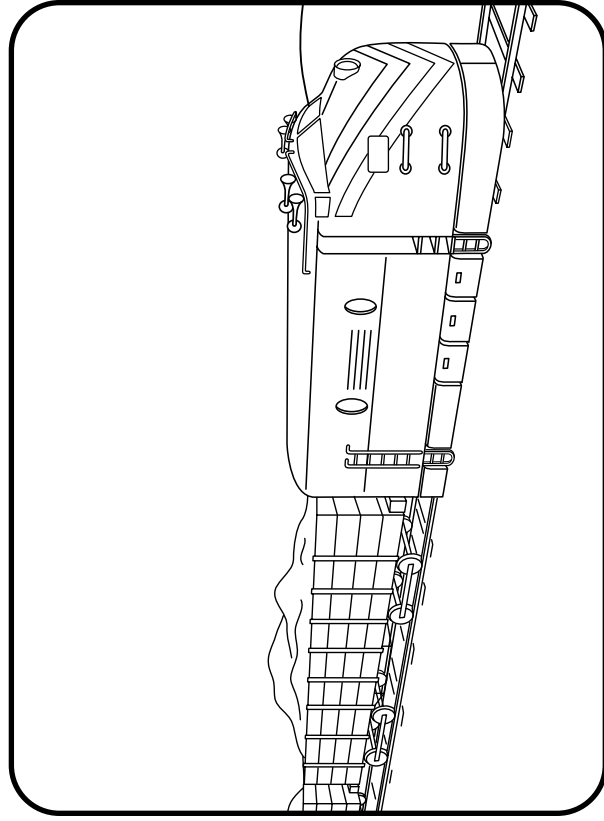
Resource Chain Card



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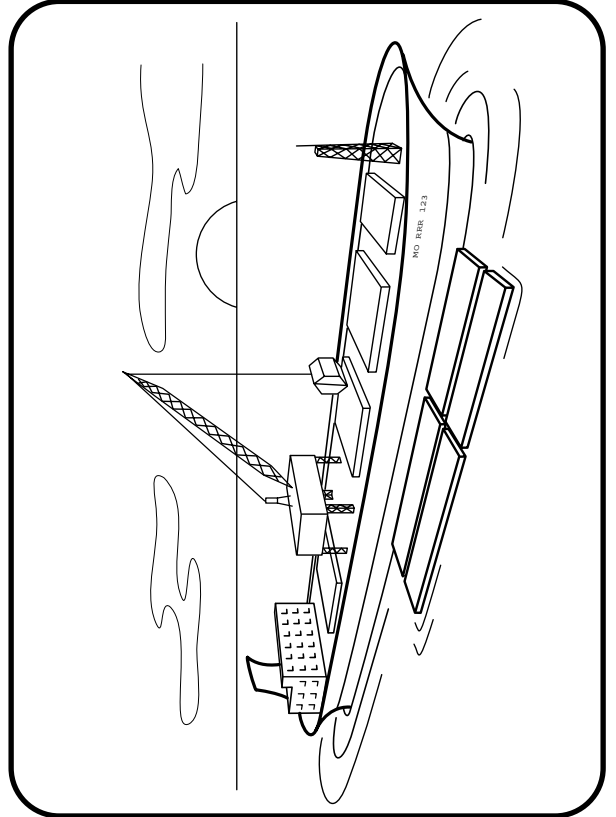
Mining the Mineral Bauxite

Resource Chain Card



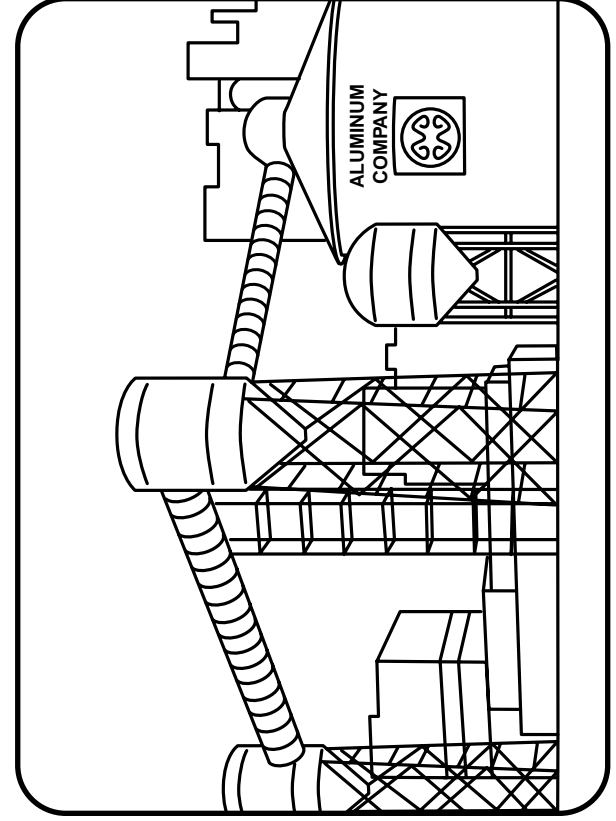
Travel By Rail to Loading Area

Resource Chain Card



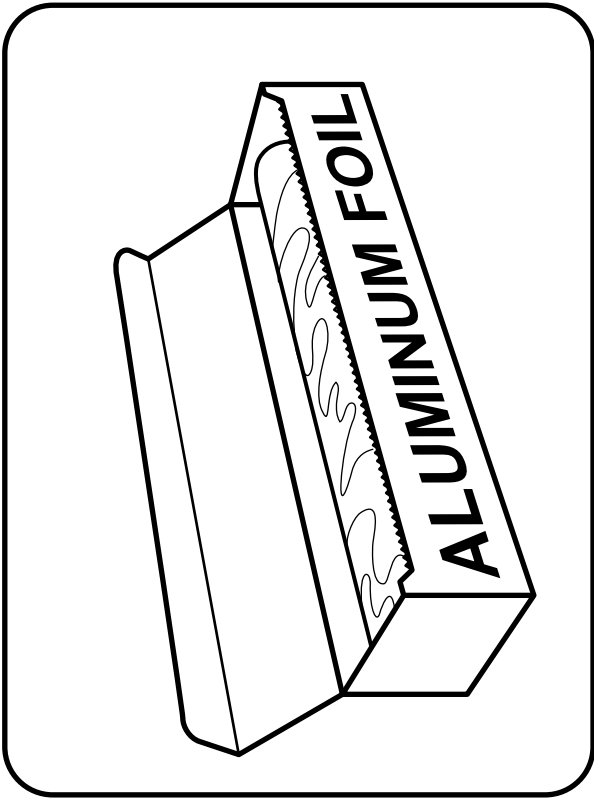
Ship By Cargo Ship to Processing Plant

Resource Chain Card



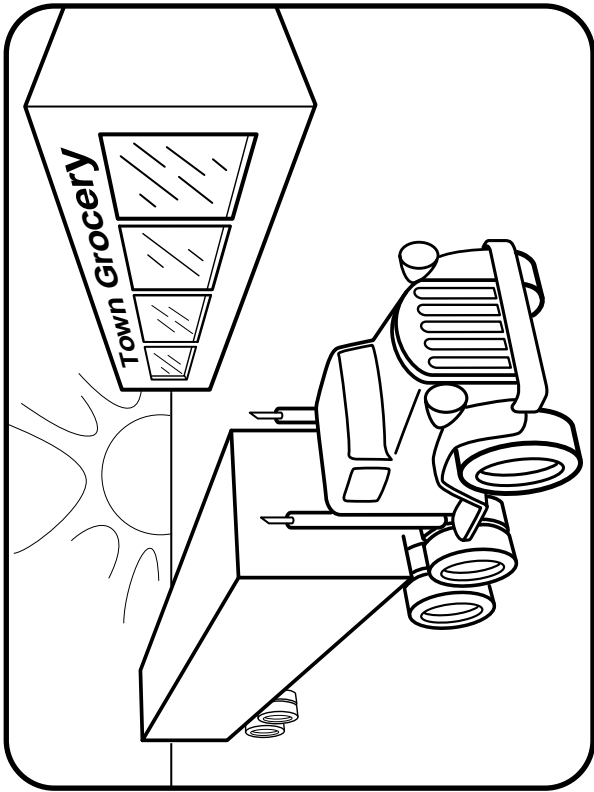
Heat and Refine Into Metallic Aluminum

Resource Chain Card



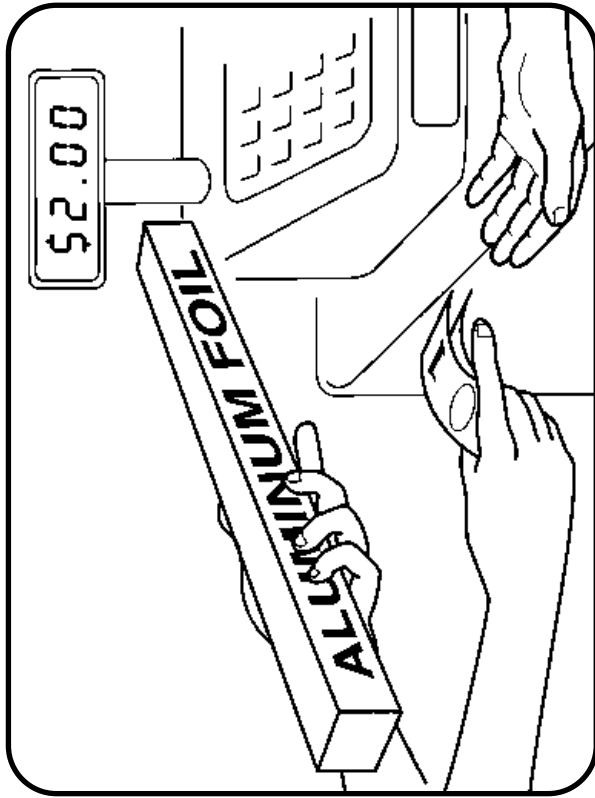
Box in Cardboard Box with Steel Blade

Resource Chain Card



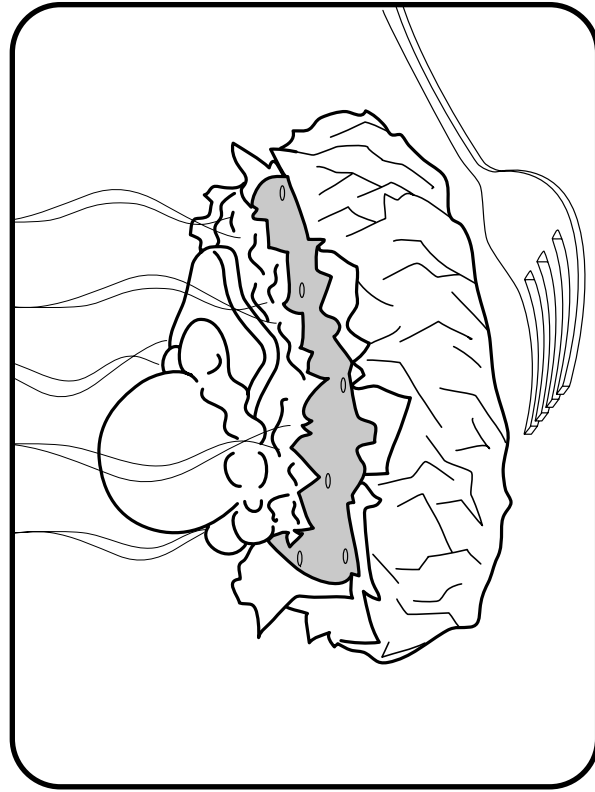
Truck to Supermarket

Resource Chain Card

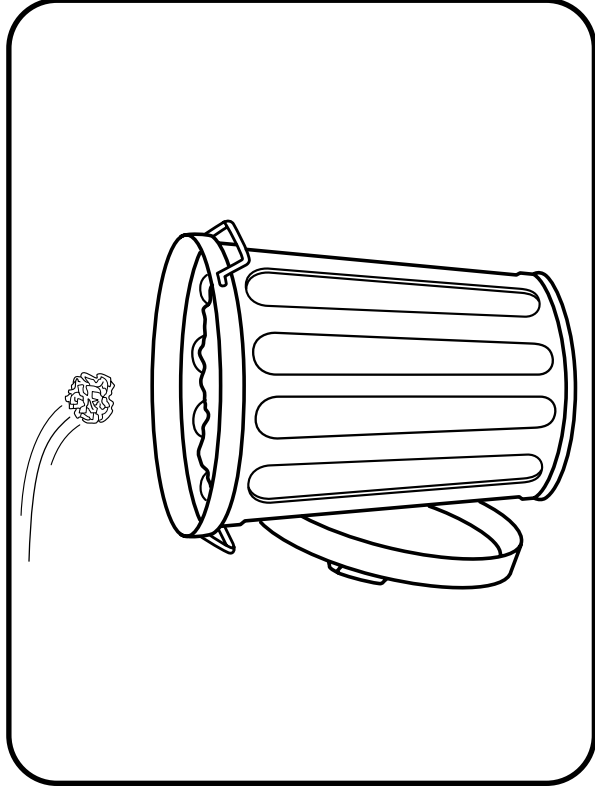


KIM WATSON ILLUSTRATIONS

Resource Chain Card

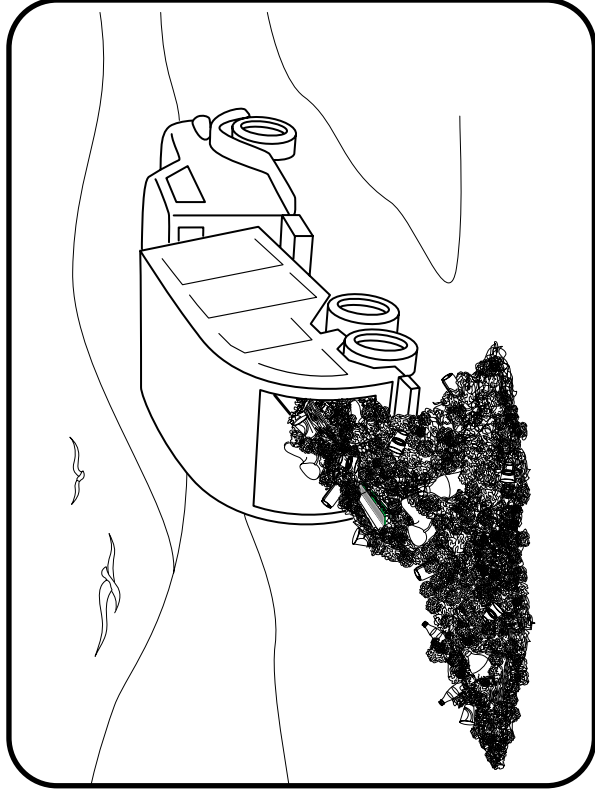


Resource Chain Card



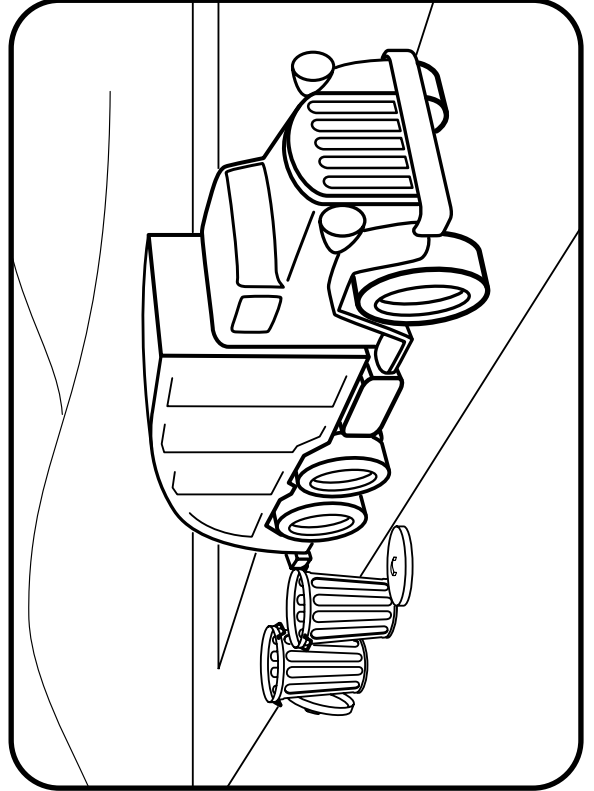
Discard in Trash

Resource Chain Card



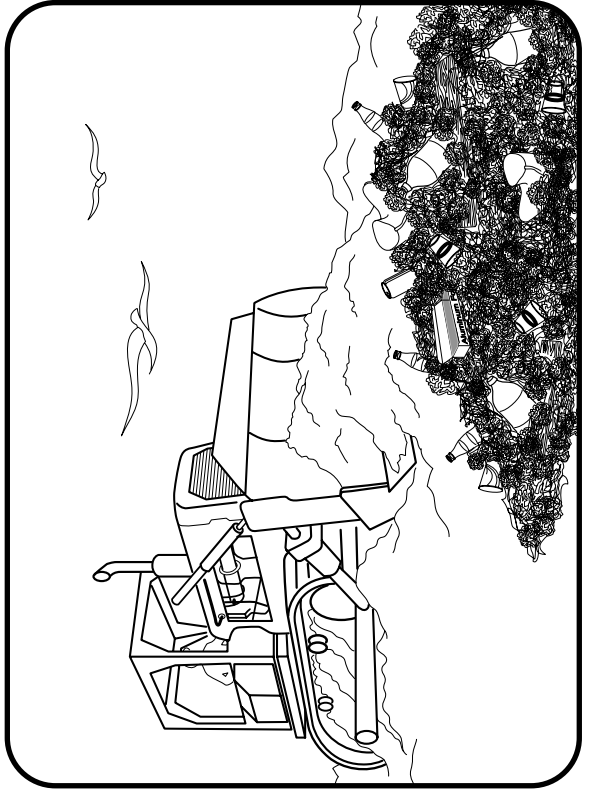
Haul to Landfill

Resource Chain Card



Pick Up by Sanitation Crew

Resource Chain Card

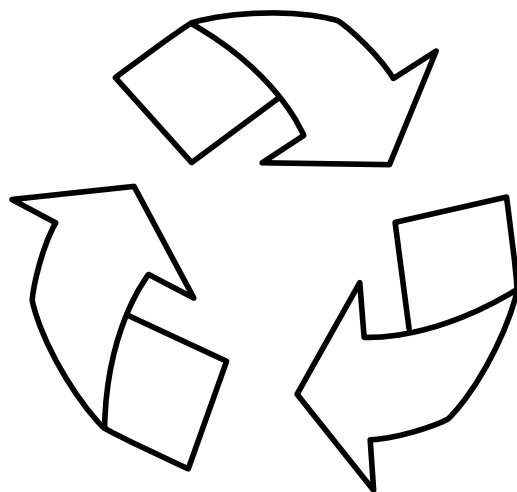


Bury in Landfill

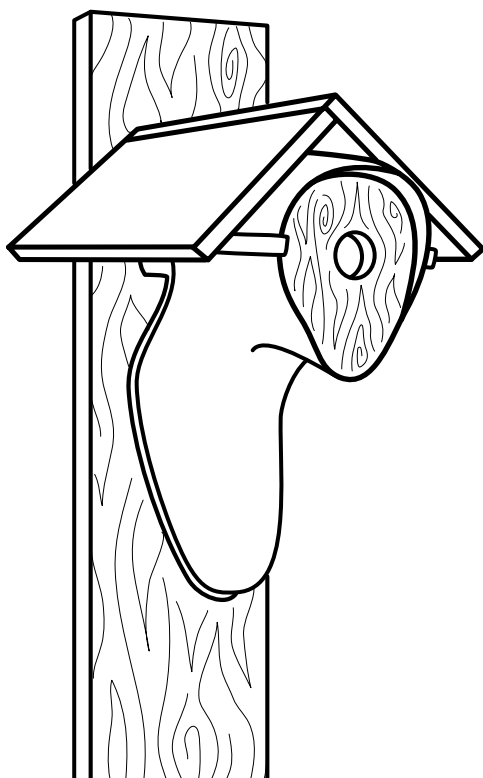
Methods of Disposal



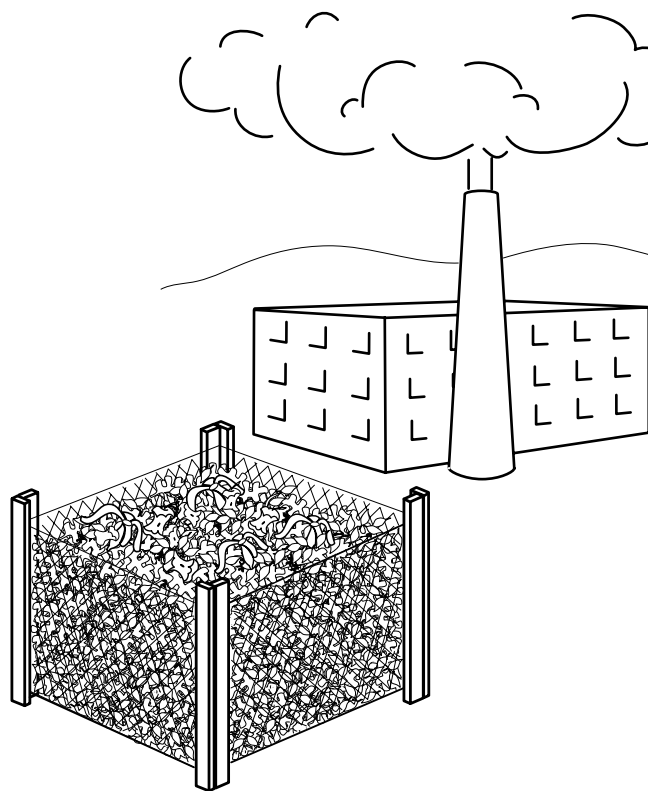
Landfills



Recycling



Reusing



Compost, Burn or Other



LISA HERIGON

Housing, Home Furnishing and Equipment

HOUSING, HOME FURNISHING AND EQUIPMENT

Learner Expectation:

Students will design a landscape plan that would provide habitat for and attract small wildlife (birds, butterflies, small mammals, etc.) to their neighborhood or yard.

CHAPTER STANDARDS		PERFORMANCE OBJECTIVES	ACTIVITIES	IDEAS
Performance	Knowledge			
1.2	CA1	1. Recognize the importance of considering conservation as a part of all homemaking tasks.	Assignment Sheets 4. Energy Efficiency 5. Kitchen Composting	@ Invite as a guest speaker a local Master Gardener. Check with the University Extension Office for a list of Master Gardeners in your area. (Master Gardeners are required to do community service programs.)
1.3	CA3			
1.4	CA6			
1.8	FA2	2. Describe the difference between the flow of matter and energy.	Transparency Masters 7. Pyramid of Life 8. Landscaping for Energy Conservation 9. Stirring Compost Bins	
2.1	MA2			
2.3	SC1			
3.1	SC4	3. List three general guidelines for conserving energy that reduce personal and environmental costs.		
3.2	SC5			
3.3	SS5			
3.4	SS7			
3.6		4. Name four ways that water can be conserved in the home or yard.	Video <i>Landscaping for Wildlife</i>	
3.8				
4.1				
4.2		5. Design an outdoor area or yard to attract wildlife and minimize maintenance.		
4.5				
4.6				
		6. Describe the procedures for setting up a compost bin or pile.		
		7. List two ways to control yard or garden pests without pesticides.		

Housing With Conservation in Mind

All homemakers are responsible for their immediate living conditions and surroundings, regardless of whether they live in a small apartment, suburban dwelling or large country home. They maintain their homes and grounds in accordance with their personal goals, values and resources. Homemakers must develop the skills, knowledge, awareness and concern for the environment that will lead them to act in an environmentally responsible manner.

Housing Construction

Many homeowners have houses built to their specifications. In this process, they have a powerful voice over what materials and systems will be used. Like all products, the resource chain of building materials should be considered.

During construction, measures should be taken to protect trees and minimize soil erosion. Saving existing trees is well worth the effort. They will provide heating and cooling benefits to reduce energy costs in the long run.

The design of the home also affects its energy efficiency. Efficient heating and cooling can be achieved by selecting alternative systems. An individual may choose ground source heat pumps which provide both heating and cooling, active or passive solar systems to provide cooling or woodburning systems. Energy efficient lighting and appliances will also contribute to a thrifty home with low environmental impact.

Water resources are also impacted by homebuilding. Water quality and flood protection are affected by the amount and characteristics of precipitation runoff. Plumbing systems can be designed to conserve water. Rural homeowners will also make important decisions about designing septic systems to protect groundwater.

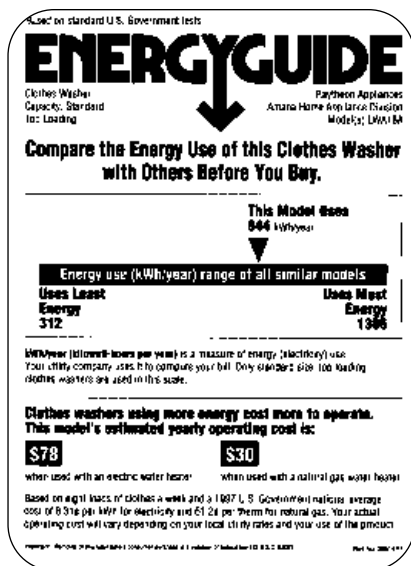
Conserving Energy

Many people advocate the concept of conserving energy, yet consumers demand energy be readily available. Actual lifestyles and practices indicate that consumers do not understand the concept of energy and how it relates to the materials used to make life easier. Solar energy flows into an ecosystem, then is either stored within the components, transferred into other forms of energy or lost to the atmosphere as heat, never to be regained or used again. Matter, on the other hand, is never lost to the system and is recycled many times.



LISA HERIGON

During home construction, nearby trees should be protected.



EnergyGuide labels tell you how much electricity an appliance will use in one year. Look in the center box for an arrow to indicate the kilowatt use for that model. The smaller the number, the less energy it uses.

HOUSEHOLD TIP

Keep faucet levers turned to cold. You use more energy when the lever is in the hot position even when the hot water never reaches the faucet.

Energy stored within the chemical bonds of energy-producing natural resources is used to heat and cool homes. Using alternative heat sources, such as wood and solar energy, decreases the dependence on coal, oil and natural gas. Proper maintenance of heating and cooling systems maintains their efficiency. The decision to appropriately insulate and weatherize new and existing homes goes a long way toward reducing consumption of fossil fuels.

Whatever fuel is used in the home, efficiency of the system and how it is used are important. Today's appliances are rated according to an Energy Guide which allows consumers to compare the amount of energy used by similar appliances and the cost to operate. The kilowatt use per year for the model is given on a scale of energy use for easy ranking with similar models.

Proper landscaping also conserves energy. Well-positioned trees provide shade in summer and protection from wind in winter. Shrubs and bushes near a foundation protect it from wind, rain, snow and weathering. They can also provide food and cover for birds, butterflies and other small animals. Since a large portion of our incomes is spent on housing and home maintenance, it is important to practice conservation measures which will reduce both personal and environmental costs. Wasteful habits increase prices and reduce the amount of natural resources available now and in the future.

Conserving Water

Because Missouri receives ample rainfall and has numerous sources for municipal water supplies, there tends to be less concern for water conservation. While water shortages have not reached the severity of the Western U.S., providing enough clean water at a reasonable price has become an increasing concern. The best way to avoid future shortages is through good planning. Only an educated community is capable of understanding such relationships and acting on them before there is a crisis. The individual homemaker can play a pivotal role in reducing water consumption.

In addition, the water supply must be protected from pollution and contamination by hazardous or toxic wastes. Items such as waste oil, gasoline, paint thinners, fertilizers, pesticides and others must be prevented from entering the surface or groundwater systems. Responsible use and disposal of household wastes falls on the shoulders of the individual homemaker.

Yard and Garden

Shrewd homeowners strive to make the most of their yard and garden space. The outside of the home projects the first impression of the dwelling and the people therein. A heavily manicured lawn requires excessive mowing, fertilizing and pesticide treatment; however, with a little effort the yard can be transformed into a showplace that provides habitat for birds, butterflies and other small animals.

Attracting Wildlife

A well-landscaped yard increases the worth of a home, and planning the yard to attract small wildlife can provide relaxation and enjoyment that rivals even a wilderness vacation area (with all the comforts of home). If wildlife is observed in the neighborhood, chances are it can be attracted to a backyard with appropriate habitat development.



Backyard wildlife habitat provides enjoyment for the entire family.

Plants which provide food and cover throughout the year go a long way towards attracting wildlife to the yard. Shrubs and bushes, which provide small fruits and seeds that last into winter, will attract birds and other wildlife when food becomes scarce. The eastern red cedar tree's evergreen foliage and berries provide cover and food for wildlife when winter winds blow.

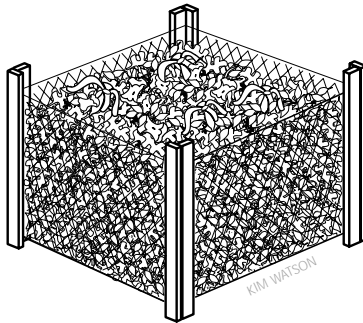
Native plants often offer the best alternatives in providing food and cover for wildlife. The practice of using indigenous plants is called *naturescaping*, and has many advantages. The plants are adapted to the weather, climate and soils of the region. They are often healthier and require less fertilizer, pesticides and water. These attributes promote conservation while saving the homeowner money.

Cover can also be provided for wildlife by landscaping with logs, rockpiles or brushpiles and arbors. Carefully selected wood benches or sawed logs provide a place for wildlife and homeowners to enjoy the outdoors. A wide variety of food and cover choices will attract numerous species into your yard. The best way to design a habitat is to provide elements which attract desired species, rather than set up pieces of habitat which are not connected or planned. Cohesiveness within the habitat plan allows animals to travel safely from one area to another, while meeting the needs for food and cover.

Water is another component of any good habitat. Provide water with birdbaths, small pools or fountains. It does not take a lot of effort, but water is an essential component of the habitat and provides a basic need for the wildlife in summer and winter. There are commercial devices available that will keep water from freezing in the winter.

Composting

Composting is the controlled biological degradation of organic material. It is a natural process that accelerates the breakdown of organic solids such as paper, yard wastes and food into a natural soil conditioner. Yard and lawn maintenance provides large quantities of clippings and other materials which can be turned into compost for future use. Composting has the potential to reduce an individual's contribution to landfill space by as much as 20 percent (Castillon, 1992) while providing a constant source of free potting soil and mulch.



Composting creates the optimum environment for aerobic bacteria and fungi to turn garbage to soil.

The goal of composting is to create the optimum environment for aerobic bacteria and fungi that transform garbage into soil.

Most people who compost use some kind of bin or container to hold compostable materials but a compost pile is equally effective. Several types of bins or boxes can be used, one of the most popular consists of four old screens hinged together to form a bottomless box. This type of box is easily moved and folds away for winter storage.

Another design, suitable for basement or garage, calls for punching several drainage holes in the bottom of a 55-gallon drum. A 30-gallon (or more) plastic or metal garbage pail can also be used. The drum is placed on cement blocks and a pan put underneath to catch runoff. A section of perforated pipe through the center provides additional ventilation and reduces the number of times the compost must be turned. On a much smaller scale, compost can be made in the kitchen with a waterproof container and small quantities of garbage and soil. (See Assignment Sheet 9, page 39.)

Whether an individual chooses to use a bin or a composting pile, the technique of composting is the same. Simply layer a variety of materials including leaves, household garbage, soil, grass clippings and manure. Usually a six- to eight-inch layer of compostable materials is covered with a one-inch layer of manure or fertilizer, then covered with one to two inches of soil. The base should be slightly elevated to promote aeration of the bottom, although, a layer of larger twigs at the bottom of a compost pile will provide the same function. Material added to the compost area should be smaller than two inches in size. Larger materials will decompose, but slow down the process. After a bin becomes two-thirds full or a pile reaches about five feet in height, you should start a new compost area.

The compost pile must be kept moist (but not soggy) and aerated. Under proper conditions the center of a compost pile becomes warm (up to 160° F.) from the action of the microorganisms. Turning the pile or mixing it periodically will hasten the process and correct any undesirable reactions. Composting should be odorless or have only a mild odor. If an offensive

odor is detected the pile should be turned immediately. The rule of thumb is, “If the compost smells bad, don’t cover it up—mix it up.”

The composting process should be complete in six weeks to six months after the last material is added. The amount of time varies according to the time of year, the amount of material added and the frequency of mixing. The finished product has a fine consistency and a brown color. In addition, the volume of the finished compost will be about half that of the original volume.

Compost can be used for enriching garden plots and for potting plants. If it will be used with indoor plants, it can be sterilized in a 200° F. oven until the center reaches and maintains a temperature of 160° F. for 30 minutes. (A meat or candy thermometer may be necessary to determine central temperature.) When used outdoors, sterilization is not necessary.

Controlling Pests

A well-balanced and healthy ecosystem has few real pests, however, you are landscaping your yard and garden environments with your favorite plant culture, not necessarily plants selected by nature. There are many techniques available for outdoor pest control which depend on plant and animal interactions rather than chemical pesticides.

Organic gardening techniques use natural parasites and predators to control pests. This technique, called integrated pest management, structures a yard or garden in such a way that the mixture of plant and animal species coexist and complement one another. The result is a stable, growing environment where no species gets out of control and minimal, if any, use of pesticides is required.

Birds and spiders provide natural controls on many insect pests and predator insects regulate prey insect populations. For example, ladybugs can be placed in an area to control aphids and mites. Egg cases of praying mantises can also be purchased or moved to a garden area. After hatching, the voracious mantises consume many insect pests, along with ladybugs and other beneficial insects.

Companion planting helps deter insect problems by combining plants which are unattractive to insects or other pests with those that are tastier. For example, planting marigolds next to green beans discourages Mexican bean beetles, nematodes and other insects from feasting on the beans. Another purpose of companion planting is to enhance the growth and flavor of certain vegetables or flowers, such as planting mint next to cabbage or tomatoes will enhance their flavor while deterring the white cabbage moth. Organic gardening references provide numerous planting combinations for the lawn and garden environment without the need for excessive chemical fertilizers and pesticides.



If the compost smells bad, don't cover it up—mix it up.

KIM WATSON



DAVID BESENGER

Nature's insect predators, such as praying mantises and ladybugs, provide natural pest control in your garden.

HOUSING WITH CONSERVATION IN MIND

MATERIALS

Several books with tips on saving the environment

Overhead projector and screen

Transparency Masters 7-9

Assignment Sheets 4 and 5

VCR and monitor

Landscaping for Wildlife video and *Dealing With Urban Wildlife* video (both available from MDC)

OBJECTIVES

After completing this lesson the student should be able to:

1. Recognize the importance of considering conservation as a part of all homemaking tasks.
2. Describe the difference between the flow of matter and energy.
3. Explain three general guidelines for conserving energy that reduce personal and environmental costs.
4. Describe four ways that water can be conserved in the home or yard.
5. Design an outdoor area or yard to attract wildlife and minimize maintenance.
6. Describe the procedures for setting up a compost bin or pile.
7. List two ways to control yard or garden pests without pesticides.

METHOD

Illustrated lecture

Video

Discussion

Performance activity

PROCEDURE

I. Introduction

- A. Homemakers are responsible for their living conditions and surroundings.
- B. They should be environmentally responsible when making decisions.

II. Presentation

- A. Discuss the importance of good conservation planning during housing construction.
 1. Protect existing trees.
 2. Minimize soil erosion.
 3. Consider energy efficiency.
 4. Protect water resources.
- B. Show **Transparency Master 7** and point out that energy is eventually transformed into heat and lost to the universe, while matter is continually recycled.
- C. Discuss ways energy can be conserved through housing equipment.
 1. Proper maintenance of heating and cooling systems
 2. Using alternative fuels
 3. Using energy efficient appliances
 4. Discuss insulation and weatherization. Distribute **Assignment Sheet 4** and have students complete it as homework.
 5. Discuss landscaping for energy conservation. Show **Transparency Master 8** and point out the benefits.
- D. Discuss ways water can be conserved and protected.
 1. Reduce water consumption.
 2. Prevent contamination.
- E. Reducing yard upkeep is one way to reduce energy and decrease chemical treatments.
 1. A well-landscaped yard increases the value and enjoyment of the home.
 2. Attract wildlife to your yard by providing wildlife habitat needs.
 - a. Food
 - b. Cover
 - c. Water

LESSON PLAN III

CONSERVATION FOR FAMILY AND CONSUMER SCIENCES

See order form for videos on page 95.

HOUSEHOLD TIPS

Use a covered pot to boil water; it is faster and uses less energy.

Cover foods stored in the refrigerator. Uncovered foods release moisture and make the compressor work harder.

Water your houseplants with leftover tea or water from steamed or boiled vegetables. Your plant will benefit from the nutrients in the vegetable water.

Protect your pet from fleas and ticks by placing pine needles, fennel or rosemary in their bedding. Also, occasionally wash them with salt water.

Use cayenne pepper to keep ants away.

Eat lower on the food chain. Plant a garden and eat your own homegrown vegetables.

Use your compost to fertilize your garden.

Plant marigolds to control garden pests.

3. Show both videos *Landscaping for Wildlife* and *Dealing With Urban Wildlife*. Discuss pros and cons of backyard wildlife.

F. Composting

1. Define composting and describe its benefits.
 - a. Controlled biological degradation of organic material
 - b. Less need for landfill space
 - c. Source of potting soil and mulch
2. Describe how to set up a compost system.

Show **Transparency Master 9**.

- a. Materials
 - b. Layering
 - c. Moisture
 - d. Mixing
3. Distribute **Assignment Sheet 5** and have students set up a composting demonstration in the classroom or at home.

G. Controlling Pests

1. Integrated pest management
2. Companion plantings

III. Summary

- A. Have students evaluate their own homes for energy efficiency and water conservation methods.
- B. Have students work in groups to design a landscape plan to attract desirable backyard wildlife to their home or school site. Instruct them to account for benefits and risks associated with specific landscape designs.

Name: _____

Point Value: _____

Points Earned: _____

ENERGY EFFICIENCY

Check your home for energy efficiency.

Find the Energy Guide kilowatt use on your major appliances:

Refrigerator _____ KWh/year Furnace _____ KWh/year Dishwasher _____ KWh/year

Clothes Washer _____ KWh/year Clothes Dryer _____ KWh/year Freezer _____ KWh/year

Air Conditioner _____ KWh/year Other _____ KWh/year

Make a draft detector and check your doors and windows.



Use floral wire or any stiff wire. Cut thin paper (tissue paper) or light plastic bag into 1/4" strips. Attach a few strips to the wire. Hold this around a window or door or any possible opening on a cold and windy winter day. If there is a draft, the paper or plastic will flutter.

Where did you detect a draft?

How could you prevent or stop the draft?

You could try this at a door:



Use fabric to make a 36" x 2" diameter tube.

Fill it with clean sand. Lay it at the base of an outside door to keep out cold air. *For fun, there are patterns available for these and some look like stuffed animals.*

Adapted from an activity by Mary Lee Meyer, Family and Consumer Sciences Instructor.

Name: _____

Point Value: _____

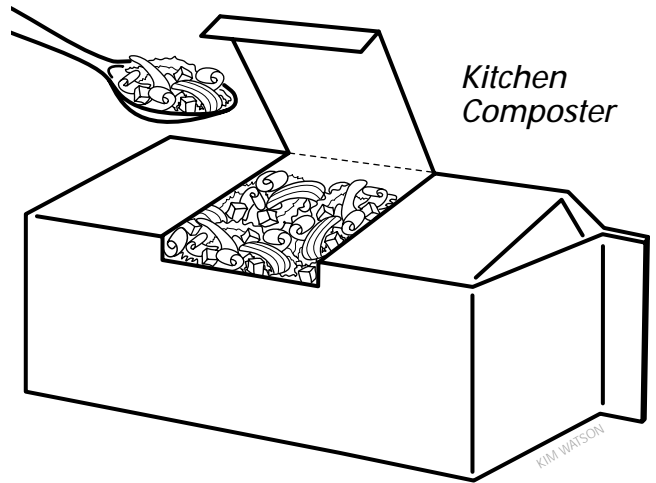
Points Earned: _____

KITCHEN COMPOSTING

You will need the following items for this activity:

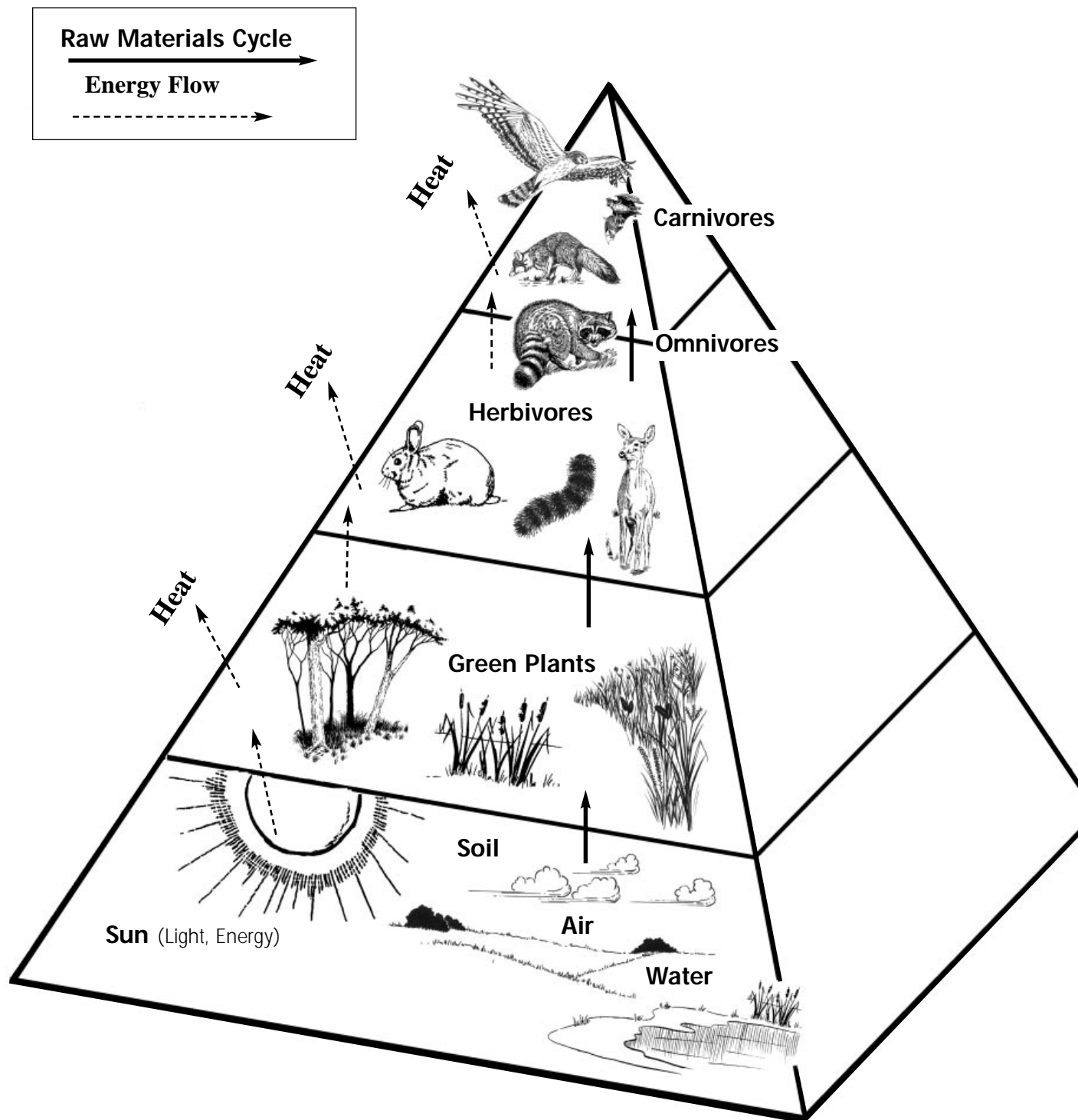
milk carton or other waterproof container
spoon
knife or scissors
food scraps
soil

1. Close the spout of the carton and cut a flap in the side large enough to put in the materials and stir with a spoon. Do NOT cut the flap completely off.
2. Cut up all your organic material. Do not use fats or meat scraps. The pieces should be as thin as possible and no more than 1" long. You may even want to whirl some of the pieces in a blender to make the pieces small and even.
3. If the garbage is unusually soggy, drain off the excess moisture and then place the garbage in the container.
4. Cover it with a fine layer of unsterilized soil.
5. The next day, stir the first layer, add a new layer of organic material and sprinkle more soil on top.
6. Stir the compost daily. Keep adding garbage and soil daily until nearly full. Then set aside and start another one, if you wish.
7. Stir the compost in the container each day. If it seems to be drying out, add a little water.
8. After about three weeks the compost should be a crumbly brown soil



Adapted from REUSES, by Carolyn Jabs, p. 74.

Pyramid of Life

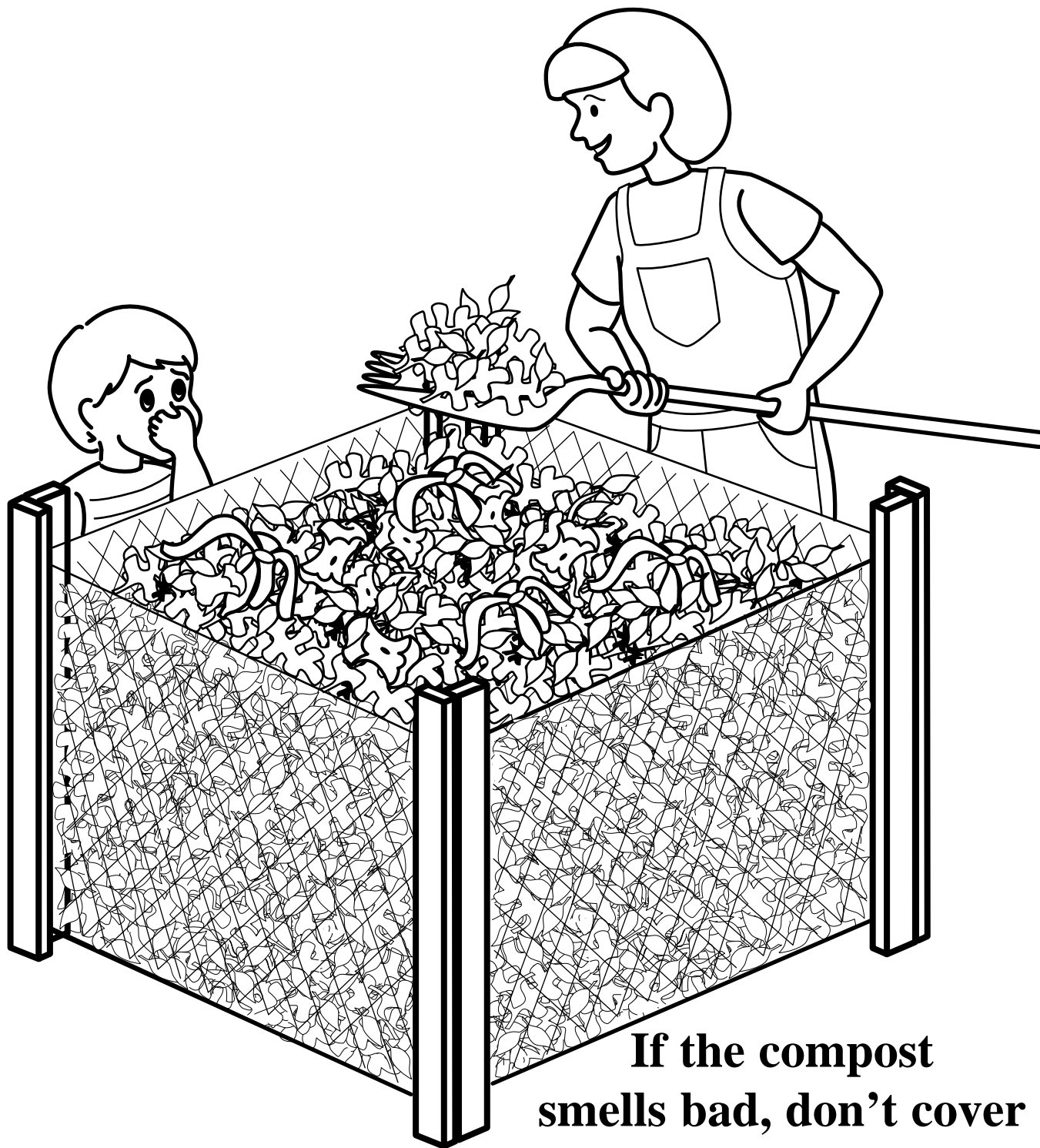


Landscaping for Energy Conservation



KIM WATSON

Stirring Compost Bins



**If the compost
smells bad, don't cover
it up—mix it up.**

KIM WATSON



PAUL CHILDRESS

Child Development, Care and Guidance

CHILD DEVELOPMENT, CARE AND GUIDANCE

Learner Expectation:

Students will conduct at least one nature-related activity for children.

CHAPTER STANDARDS		PERFORMANCE OBJECTIVES	ACTIVITIES	IDEAS
Performance	Knowledge			
1.3	CA1	1. Select age-appropriate nature and conservation activities for students of two age groups.	Job Sheet	@ Interview a teacher of any child and find out activities that they use for nature and conservation learning.
1.4	CA2		2. Conducting a Nature Activity	
1.5	HP5	2. Conduct a nature and conservation activity with one of the groups chosen.	Assignment Sheet	
1.8	SC3		6. Faces in Nature	
2.1	SC8		Video	
2.2			<i>Babes in the Woods</i>	
2.3			Transparency Master	
4.7			10. Levels of Conservation	
			Student Handout	
			1. Nature Activities for Kids of All Ages	

Children and Nature

Most children love to be outdoors. Through their outdoor experiences they begin to form attitudes and values concerning plants and animals. Even the youngest are fascinated by blowing leaves, sunlight and shadows and bugs and other critters. As they grow, children begin to put the pieces of their world together, which leads to an understanding of their role in the use or abuse of natural resources. The role children choose to portray as adults is largely a result of their childhood experiences.



MARK RAITHEL

Allow infants and toddlers to explore and enjoy nature.

Conservation Awareness

It only takes a few observations to realize that the world is plagued by environmental problems. It is easy to blame someone else's actions for our global environmental conditions, yet each person's actions affect the environment. Becoming aware of conservation problems occurring in state and local areas requires knowledge of what is good or bad in terms of environmental conditions. Taking action to correct or prevent the problem requires an environmentally literate and committed citizen.

Age Appropriate Activities

To expect young children to have the same knowledge and interest in natural resource conservation as an adult would be unrealistic, yet both can relate to the world around them. Knowledge of the natural world begins with childhood experiences and continues throughout life. An increase in the variety and complexity of conservation activities enables individuals to grow in their understanding and commitment to conservation.

Infant and Toddler

Opportunities to discover nature should begin at an early age. Colors, sounds, textures and odors found in the outdoors contribute to children's enjoyment and perception of their environment. Very young children have a curiosity and enthusiasm envied by most adults. The excitement of finding a dandelion rivals that of an orchid and little inhibition exists over the discovery of a creepy-crawly. Constant supervision is a must during outdoor explorations since young children are unaware of what dangers may exist. They can quickly get into a hazardous situation, especially around water. Affording outdoor play time and exploration provides children with a chance to enjoy the wonders of their world, from the warmth of sunshine to the feel and sound of rustling leaves.



LISA HERIGON

Young learning begins with awareness.

Preschool

Preschoolers are beginning to form their values and attitudes toward the environment. At this stage, a caring attitude for the environment should be encouraged, rather than focusing on nature's concepts and principles. Appropriate preschool activities emphasize feelings, awareness, caring



LISA HERIGON

Elementary education along with hands-on experiences increases a child's knowledge of nature.

and appreciation for the natural world. Hands-on encounters with nature are important to the development of these feelings. Such experiences will provide the foundation which will later allow children to construct their knowledge of the world and how it works.

Elementary

Upon entering school, the formal learning of a child begins. Hands-on activities designed to allow children to learn by doing becomes an important part of their environmental conservation experiences. Gathering factual information regarding natural resource conservation allows them to mesh their emotions with scientific realities.

Since a child's actions and opinions regarding conservation frequently result from watching others it is vitally important that all students are exposed to good role models. The old axiom "actions speak louder than words" requires that each teacher, parent, youth leader and educator evaluate their own behavior toward the environment with a critical eye to ensure that positive actions and attitudes are conveyed to students.

Students are bombarded with many types of information regarding the environment and conservation. The role of the teacher is not only to set a good example, but to provide many learning opportunities for students to view good and bad examples of resource use. In addition, accurate and factual information must be provided regarding the environment, its resources and people's use of them.

Middle

Middle level students are developing abstract thinking abilities which allow them to make connections between human actions and environmental reactions. Students begin to form strong opinions about how (and if) natural resources should be used. While concern and responsibility for the environment should be encouraged, it is important to develop the concept of conservation as it applies to using resources without abusing them.

Secondary

Older students are more sophisticated in their knowledge and understanding of the complex interrelationships which govern the natural world. Their concern for the environment is often conveyed on a global level with little emphasis on the importance each one plays in the overall conservation picture.

Activities which focus on issues closer to home can assist these students in developing behaviors and lifestyles which will promote conservation of natural resources at home. The philosophy of "Think globally—act locally" should be used to prepare students to promote the wise use of natural resources through appropriate conservation measures.



CLIFF WHITE

Secondary students learn about conservation issues near home.

CHILD DEVELOPMENT

MATERIALS

Overhead projector and screen
Transparency Master 10
Pictures of children of all ages in the outdoors (could be provided by students), magazines, poster board, scissors, glue
Job Sheet 2
Assignment Sheet 6
Babes in the Woods video (available from Missouri Department of Conservation)
VCR and monitor
Student Handout 1

OBJECTIVES

After completing this lesson the student should be able to:

1. Select age-appropriate nature and conservation activities for students at two age groups.
2. Conduct a nature or conservation activity with one of the groups chosen.

METHOD

Illustrated lecture
Performance activity

PROCEDURE

I. Introduction

A. Children love to be outdoors. Show pictures of children and students in the outdoors.

B. Nature activities are performed at many levels. Show **Transparency Master 10**.

1. Awareness
2. Knowledge
3. Concern
4. Action

II. Presentation

A. Different age levels learn about nature in different ways.

1. Infants and Toddlers
 - a. Discover nature through the senses.
 - b. Show video ***Babes in the Woods***.
 - c. Need constant supervision.
 - i. Water can be a hazard.
 - ii. Falls and other injuries are possible.
2. Preschool
 - a. Caring attitudes should be encouraged.
 - b. Appreciation developed through hands-on encounters with nature.
3. Elementary
 - a. Hands-on activities take on more scientific meaning.
 - b. Conservation facts help students begin to clarify emotions with realities in nature.
4. Middle level
 - a. Ability to reconcile actions and consequences increases, allowing more detail in theoretical and practical learning.
 - b. Concern and responsibility for environmental manipulation is developed.
 - c. Using natural resources wisely (conservation) to provide needs and wants on a continual basis is an important concept to develop.

LESSON PLAN IV

CONSERVATION FOR FAMILY AND CONSUMER SCIENCES

5. Secondary

- a. Sophisticated knowledge base expands to include global problems.
- b. Students develop an increasing ability to control and take responsibility for their own actions in the local and global environment.

III. Summary

- A. Developmental differences determine how children perceive nature and conservation.
- B. Growth in understanding the natural world leads to a better understanding of conservation practices.
- C. Have students complete **Assignment Sheet 6** and **Job Sheet 2** to reinforce the lesson. Use **Student Handout 1** for additional ideas.

Name: _____

Point Value: _____

Points Earned: _____

FACES IN NATURE

Find pictures of children and young adults in the outdoors. Make a mini-collage depicting the levels of conservation activity.

<p>Awareness</p>	<p>Knowledge</p>
<p>Concern</p>	<p>Action</p>

Name: _____

Point Value: _____

Points Earned: _____

CONDUCTING A NATURE ACTIVITY

Choose two age groups and list five nature activities that are developmentally appropriate.

Age Group: _____

Age Group: _____

1. _____

1. _____

2. _____

2. _____

3. _____

3. _____

4. _____

4. _____

5. _____

5. _____

Select an age group and conduct one of the activities. Complete the information below.

Age Group: _____

Activity Plan: _____

1. Objective/goal: _____

2. Describe how the activity will be conducted. _____

3. Time needed to conduct the activity: _____

4. Materials or equipment needed: _____

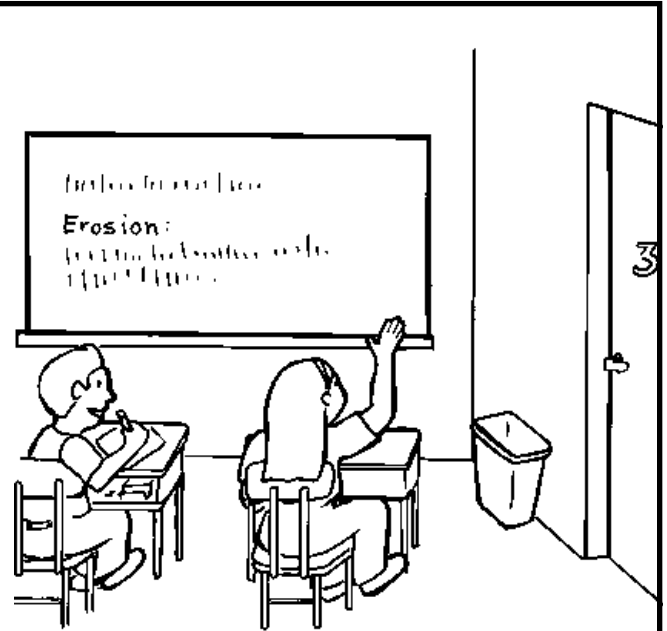
5. Summary of activity: (How did it work? What happened?) _____

What would you do different next time? _____

Levels of Conservation Activity



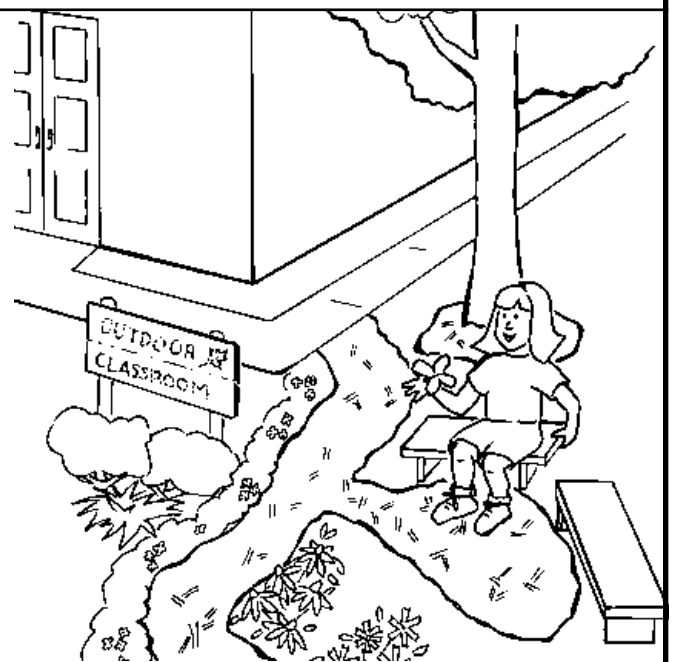
Awareness



Knowledge



Concern



Action

MARTHA DANIELS

Nature Activities for Kids of All Ages

Here are some ideas for getting kids of various ages and learning levels introduced and involved in nature:

Infant/Toddler

Take infants outside, point to objects and identify the objects by name. If the infant cannot communicate, he or she can still absorb the surroundings.

Allow infants to touch plants and animals that cannot harm them. This will help infants feel more comfortable in the outdoors.

Preschool

Take the kids outside and make a nature jar. Have them pick up seeds, nuts and berries or fruits to put in the jar. After collecting the items, dump out the jar and have the kids sort the items by similarities. Tell them that seeds are how plants have babies. Talk about the different kinds of seeds.

Hide shelled peanuts around the room. Show pictures of different animals, including a squirrel. Ask kids how the animals get ready for winter. How do people get ready for winter? Discuss the kids' answers. Have students pretend to be squirrels and hunt for nuts. Let the kids eat the nuts when you are finished.

Elementary

Read a story with animals in it, like *Toad and Frog Are Friends*, to the children. Have them make puppets and put on a puppet show to illustrate the story.

Do leaf rubbings. Place a leaf, vein side up, under a piece of paper. Have students rub a crayon over the leaf, discovering the pattern of the veins. Taping the leaf down will help younger students.

Middle Level and Secondary

Many activities for these levels can be similar and adapted according to abilities and interests. The detail and depth included will depend on the maturity of the individual groups of students.

Help students create a compost bin.

Organize a community awareness campaign. Choose an environmental issue. Students can organize a community awareness day or plan an advertising campaign.

Students can research a local environmental issue. Assign students to both sides of the issue and hold a debate. If passionate enough, students may want to voice their opinions at a community meeting.



JIM RATHERT

Family Living and Parenthood

FAMILY LIVING AND PARENTHOOD

Learner Expectation:

Students will differentiate between the preservation, restoration and management levels of conservation.

CHAPTER STANDARDS		PERFORMANCE OBJECTIVES	ACTIVITIES	IDEAS
Performance	Knowledge			
1.3	CA1	1. Describe the benefits of conservation-related recreation.	Assignment Sheet 7. Planning An Outing	@ Have students write a business letter to the Conservation Department requesting information on Missouri hunting and fishing laws and regulations.
1.8	CA3			
1.9	CA6	2. Discuss two possible causes for a growth in opposition to harvest-oriented conservation sports.	Student Handout 1. Poison Ivy	
2.3	HP3			
3.1	HP6		Transparency Masters	
3.2	HP7		11. Poison Ivy	
3.3	SC4	3. Identify four non-harvest conservation activities.	12. Tick Habitat	
4.1	SC8			
4.2	SS5			
4.3	SS6			
4.7		4. Recognize safety precautions when using the outdoors for recreation.		
		5. Discuss the ethical or moral reasons for conservation practices.		
		6. Examine the students' attitudes toward the environment and establish appropriate role model behaviors.		

Recreation and Conservation

Although many pollution-related health problems exist in the world today, the outdoors still provides a generally safe place for healthy recreation. Conservation-related recreational activities vary from watching nature programs on television to hunting, fishing and trapping in the outdoors. One major benefit of conservation-related activities is the relaxation and reduction of stress they can provide.

Leisure Time

Although there are numerous ways to spend leisure time, almost everyone longs (at least occasionally) to get away from the artificial surroundings of a human-made environment—to get outdoors and commune with nature. According to a recent survey conducted by the Department of Conservation, approximately 85 percent of Missourians have some interest in the outdoors and 50 percent indicate that fishing, hunting, birdwatching or other outdoor activities are the recreational pursuits they most enjoy.

Conservation-related Sports

The most obvious conservation sports are fishing and hunting. There are many different varieties of each of these pursuits. Ethical hunters and anglers enjoy the outdoors for the pleasure of being in it and practice good conservation habits while partaking of their sport. The same is true of trappers.



Hunting, fishing, birdwatching and other outdoor recreation are enjoyed by more than 50 percent of Missourians.

Virtually all Missourians approve of fishing and a majority of them approve of hunting whether or not they are active participants. Fewer than half of the survey respondents favored trapping, although a majority of rural respondents supported trapping. As a society, Missourians have become less rural than even a generation ago and, without direct ties to the land, our sentiments toward harvest have changed. Perhaps a better understanding of the principles of wildlife conservation would enable more Missourians to understand the need for regulated harvest of wildlife.

REGULATIONS

Hunting, fishing and trapping regulations are designed by experts as part of a comprehensive management plan to sustain wildlife resources for the continued use and enjoyment by everyone. Harvest by these carefully regulated methods is required to keep wildlife populations in balance. Those who break the rules jeopardize the resource and reduce the opportunities for all Missourians to enjoy the resource. Individuals who prefer other outdoor activities should realize that legal harvest is vital to the continued availability of the wildlife and fishery resources.

HUNTER EDUCATION

Hunter Education courses are mandatory for all hunters born after January 1, 1967. These classes provide training in firearms safety and wildlife resource management. They are held locally, throughout Missouri, by volunteer Hunter Education Instructors. The conservation agent in each county can provide additional information.

Conservation Activities

A wide variety of non-harvest conservation activities are also fun to do. Hiking, visiting zoos and botanical gardens, picnicking, photography, camping, target shooting, backpacking, gathering mushrooms—the list goes on. One very popular activity is backyard birdfeeding.

Outdoor Safety

The natural environment may be hazardous because of terrain, poisonous plants or venomous animals. With a little care and precaution, being in the outdoors can be a safe and enjoyable experience.

Precautions

Some outdoor pursuits will require little preparation. Dressing appropriately for the activity may be all the precaution needed. Insect repellent may be necessary if traveling in areas with heavy vegetation. Heavy boots are necessary if hiking in areas where snakebite may be a problem. For the most part, staying on a path or trail reduces risk, and awareness of the surrounding area enhances the experience of being in the outdoors. Being able to identify poison ivy is helpful in avoiding exposure.

One thing to remember, the outdoors is shared with others: animals, plants, ticks, chiggers and even humans. All have their rightful place in the web of life.

General Safety

When outdoors, it is important to be aware of the environment and the regulations established for the area. Also, if hazards such as cliffs, sinkholes or deep water exist, they should be viewed with caution. Most outdoor public areas provide this information in a brochure, located at a headquarters site or along a trail. Parents should keep young children in sight at all times. Be aware of the opening dates of hunting seasons if you are visiting an area where hunting is permitted. Potential accidents can be prevented by knowing these important dates.

Special relationships that exist within a family can be strengthened when the family works together and communicates well. Pressure to be a wise steward of the environment, to practice good conservation measures and to be a responsible consumer, should be shared by all family members.

OUTDOOR TIPS

When outdoors in summer, guard against ticks by tucking pantlegs in socks or boots or by wearing a repellent.

Should you find a tick fastened, remove it immediately, with a pair of tweezers if possible. Be careful to remove all mouth parts. Treat the bite with an antiseptic.



If you come into contact with poison ivy, wash the area with soap and water as soon as possible to remove the plant's oils from your skin. Irritation can be caused by the oils.

Family Living and Parenthood

Conservation Ethics

Ethics are associated with a system of moral or principal values. There is a moral reason for conservation. Today's citizens should not plunder resources which will also be needed by future generations. The way citizens behave toward the environment today will determine what resources will be available for the children of tomorrow. Responsible stewardship and conservation of natural resources will go a long way toward ensuring a quality of life fit for living.

Importance of Role Models

Actions speak louder than words; every parent, teacher and leader conveys their real attitudes toward conservation by the examples they set. The most difficult task for parents, or other role models, is to examine their own behaviors with regard to the use of resources and the environment, then make whatever adjustments are necessary to provide a good example for youngsters to follow.



A role model's respect for the environment leaves a lasting impression.

PAUL CHILDRESS

FAMILY LIVING

MATERIALS

Overhead projector and screen
Transparency Masters 11 and 12
Student Handout 2
Assignment Sheet 7

OBJECTIVES

After completing this lesson the student should be able to:

1. Describe the benefits of conservation-related recreation.
2. Discuss two possible causes for a growth in opposition to harvest-oriented conservation sports.
3. Identify four non-harvest conservation activities.
4. Recognize safety precautions when using the outdoors for recreation.
5. Discuss the ethical or moral reasons for conservation practices.
6. Examine their own attitudes toward the environment and establish appropriate role-model behaviors.

METHOD

Group discussion
Illustrated lecture

PROCEDURE

I. Introduction

- A. About 85 percent of Missourians have some interest in the outdoors.
- B. More than 50 percent of Missourians fish, hunt, birdwatch or pursue other outdoor activities.

II. Presentation

- A. Have students make a group list of conservation-related outdoor activities.
- B. Highlight those activities in which students participate.
- C. Discuss possible objections to harvest-oriented conservation sports (hunting, fishing, trapping).
 1. Emotional attachment to wildlife and assigning human characteristics to them
 2. General trend toward more urban population reduces physical contact with and understanding of wildlife in the natural environment
- D. List common concerns when participating in an outdoor nature activity and the appropriate precautions to reduce risks.
 1. Show **Transparency Master 11** and go over characteristics of poison ivy. Distribute **Student Handout 2 (Poison Ivy)**.
 2. Show **Transparency Master 12** and discuss how to prevent the condition shown.
 3. Have students complete **Assignment Sheet 7**. Discuss differences in planning as a parent for a child, versus planning for your peers.
- E. Explain ethical responsibilities for using the outdoors.
 1. The way citizens behave today will determine what resources will be available for future generations.
 2. Positive attitudes must be displayed, not just recommended.

III. Summary

- A. Help students examine their own attitudes toward the environment.
- B. Discuss ways they can become positive role models for their peers and others.

Name: _____

Point Value: _____

Points Earned: _____

PLANNING AN OUTING

Choose one of the two options below and complete:

- 1. As a parent you are planning an outing to a nearby conservation area.**
- 2. You are inviting a group of your friends to an outing at a nearby conservation area.**

Make a list of the things you would do before, during and after the trip. What rules would you provide for your friends or your child?

How to Identify Poison Ivy



- @ **Three Leaves**
- @ **Middle Leaf on Petiole**
- @ **Irregular Edge to Leaf**

Tick Habitat



POISON IVY

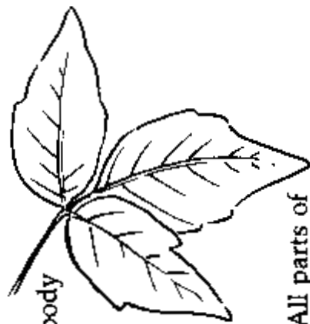
*How to identify
and control*



MISSOURI
DEPARTMENT OF
CONSERVATION

An irritating plant

POISON IVY is a woody shrub or vine with hairy looking aerial roots. It grows to 10 feet or more, climbing high on trees, walls and fences or trails along the ground. All parts of poison ivy, including the roots, are poisonous at all times of the year.



The toxin in poison ivy is an oil which causes an irritating skin reaction on many people. The reaction, an itchy rash with clear blisters, is variable in severity among people, and can vary from year to year on the same individual.

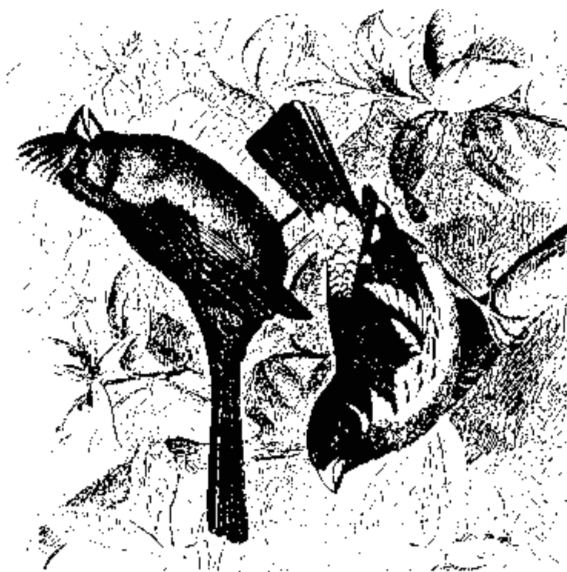
The poison ivy reaction can be reduced if you change clothing immediately and wash the exposed skin with soap and water. If you can wash all the oil off exposed skin within 5 minutes of contact, no reaction will occur. Even water from a running stream is an effective cleanser. The oil from poison ivy can remain active on clothing and footwear as long as a year--so be careful not to expose yourself to the oil again. The oil can also be transmitted on pet fur and in the smoke of burning poison ivy.

YOU CAN USE various products such as Multi-Shield applied prior to anticipated exposure or Tecnu Skin Cleanser to cleanse exposed skin. However, the best way to avoid the irritating rash is being able to identify poison ivy.

and a good plant

POISON IVY is a nuisance to people but compensates by having considerable wildlife value.

The white, waxy berries are a popular food for songbirds during fall migration and in winter when other foods are scarce. Robins, catbirds and grosbeaks especially like the berries. Many birds feed on insects hiding in the tangled vines. Small mammals and deer browse on the poison ivy foliage, twigs and berries.



IDENTIFICATION

POISON IVY is commonly confused with other plants. Here are the key differences to look for to distinguish poison ivy from its look-alikes:

Poison ivy

- ▲ three divided leaves
- ▲ center leaflet on a longer stalk
- ▲ white, waxy berries along the stem
- ▲ leaves alternate on the stem
- ▲ erect shrub or climbing vine

Fragrant sumac

- ▲ three divided leaves
- ▲ center leaflets not on a stalk
- ▲ red, fuzzy berries at the end of stem

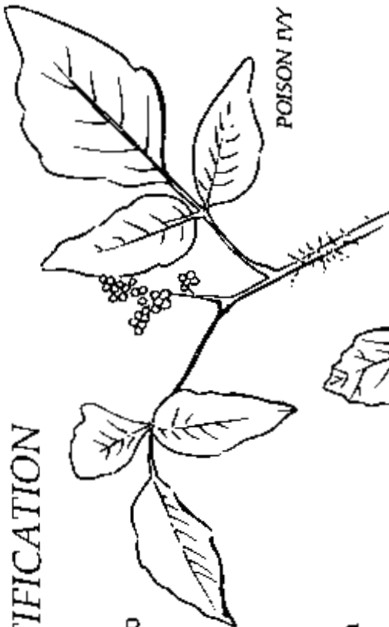
Box elder

- ▲ erect shrub
- ▲ three to seven divided leaves
- ▲ leaflets pinnate like a feather
- ▲ leaves opposite on stem
- ▲ erect tree

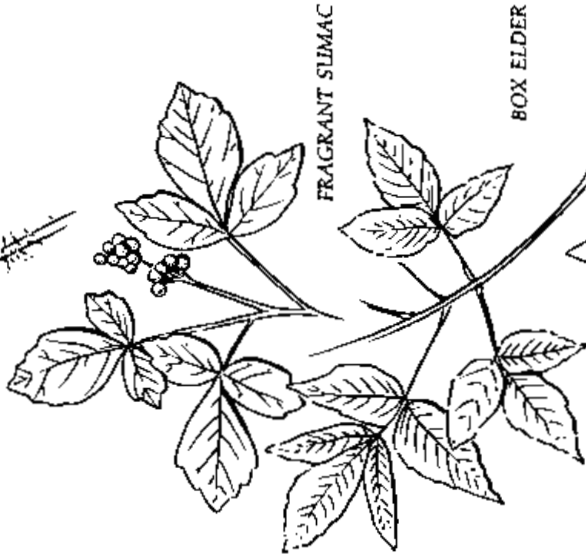
Virginia creeper

- ▲ three to five divided leaves
- ▲ leaflets palmate like an outstretched hand
- ▲ blue-black berries along the stem
- ▲ trailing or climbing vine

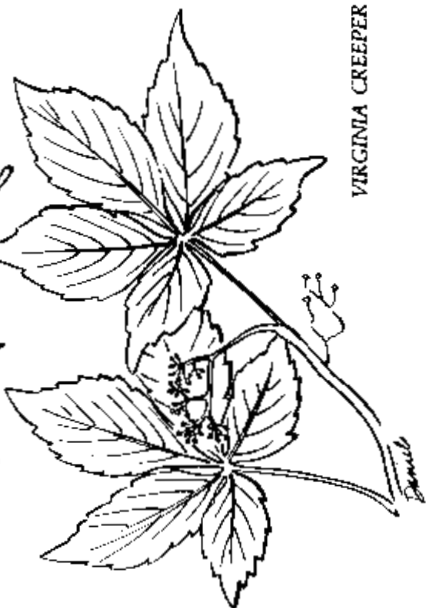
CONTRARY TO POPULAR BELIEF, poison oak is found only in a few counties in extreme southern Missouri. Another common misconception is the belief that poison sumac or shumac grows in Missouri. This shrub or small tree resembles smooth sumac but has never been found in the state.



POISON IVY



FRAGRANT SUMAC



BOX ELDER

VIRGINIA CREEPER

CONTROL

POISON IVY CONTROL can be done at any time of the year, but is best achieved May through July while the plants are flowering. Poison ivy should be accurately identified before you attempt any control measures. Spraying is recommended over burning because poison ivy oil vaporizes when hot, carries in smoke and can cause a severe rash.

Poison ivy foliage within reach can be sprayed with glyphosate (sold under the trade names Roundup, Kleenup and others) according to label directions. When using this or any herbicide, always read and follow label directions carefully. Take care to avoid other plants and do not spray so heavily the herbicide drips off the leaves. Glyphosate is a non-selective herbicide and will kill any vegetation it contacts.

To kill poison ivy that climbs high into trees, cut the vine off 6 inches above ground level. Treat the stump with glyphosate (according to label directions) immediately after cutting to kill the roots and prevent sprouting. If re-sprouting does occur, treat the leaves with glyphosate.

Poison ivy can be very persistent, so you may have to spray the vines two or more times for complete control. Poison ivy can spread along fence or hedge rows and under trees by birds dispersing the seeds. Treating young seedlings with glyphosate will kill them and limit the spread of poison ivy.



JIM RATHERT

Nutrition and Wellness

NUTRITION AND WELLNESS

Learner Expectation:

Students will plan a meal that includes a game animal (meat, fish or fowl) as part of the menu.

CHAPTER STANDARDS		PERFORMANCE OBJECTIVES	ACTIVITIES	IDEAS
Performance	Knowledge			
1.1	CA1	1. Plan a meal that includes a game animal or wild plants as part of the menu.	Assignment Sheet 8. Wild Menu Handout 2. Wild Menu Transparency Master 13. Wild About You Restaurant	@ Students could access the Internet for wild edible recipes. @ Practice math skills by increasing or decreasing recipes to prepare for class. @ Invite a hunter to prepare his or her specialty game dish.
1.2	CA3			
1.4	CA6			
1.5	HP2	2. Discuss advantages and disadvantages of using wild edibles.		
1.8	HP6			
1.9	HP7	3. Identify two sources of wild edibles.		
1.10	MA1			
2.3				
2.5				
4.6				
4.7				

Nutrition and Wellness



For decades, Missouri's outdoor enthusiasts have been using wild edible recipes from Cy Littlebee's Guide to Cooking Fish and Game, available from the Missouri Department of Conservation.

The relationship between health, economics and the environment is readily grasped when food becomes the connecting thread. Most food comes directly or indirectly from the soil. (The only exceptions are plants grown through a process called hydroponics.) Whether food comes from individually-based gardens or large-scale farms, care in protecting the soil base becomes one of the keys to good nutrition and affordable meals. The idea of totally “living-off-the-land” is very difficult to accomplish in these days of urban sprawl and high technology; however, wild foods add interest to a meal while providing a relatively inexpensive source of nutrition.

Wild Edibles

Using wild edibles (game, fish and plants) as a source of food is relatively ignored by most Missourians. A number of excellent game and fish cookbooks exist, but the trick to healthy and tasty meals from wild edibles is proper cleaning and preparation. Additional information on preparation and cleaning (and some delicious recipes, too) can be found in *Cy Littlebee's Guide to Cooking Fish and Game* (Missouri Department of Conservation).

Game

Really, there are no fancy tricks to cooking game. It is just meat, which if handled properly is not only as tasty as beef, chicken and pork, but is nutritionally superior. Deer, raccoon and muskrat contain less fat and fewer calories and supply more protein, vitamins and minerals than domestic meats. Beaver has a higher fat and caloric content than beef, but contains more iron, phosphorus, calcium, vitamin A and riboflavin.

Proper cleaning and preparation of the meat includes removal of the glands (found at the base of the appendages) and removal of visible fat from the carcass. An overnight soak in saltwater or a marinade is advisable. Then simply substitute the wild meat for domestic meat in menu preparation.

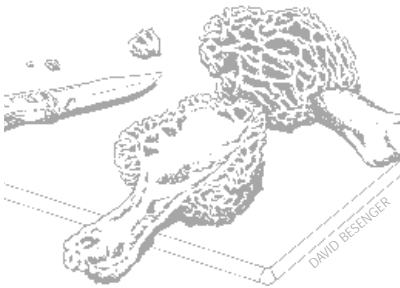
Fowl

Gamebirds are a favorite wild edible with many varieties available. Bobwhite quail, wild turkey and other upland gamebirds provide delectable alternatives to domestic poultry. The added assortment of waterfowl available in Missouri whets the appetite even more. Wild birds can replace domestic counterparts in numerous recipes calling for poultry or fowl.

Fish

Lately, the healthy benefits of fish in the diet have been praised. Although most commercial varieties of fish are oceanic, some fresh-water fish are also showing up at the supermarket. Health benefits of fish include lower cholesterol and fat content. High nutritional value coupled with low caloric content make fish a healthy main dish.

Some fish have a stronger flavor than others. Removing the darkened area of muscle just under the skin of catfish will reduce the oily or fishy taste and provide a milder flavor.



Take care to properly identify wild mushrooms before eating.

Plants

Many edible plants are readily obtained throughout Missouri if you have the ability and time to find them. Even sidewalk dandelions provide greens for salads and pollen for fritters. The variety of edible plants ranges from nuts and berries to pawpaws and sassafras. Many Missourians add wild mushrooms to their list of staples; however, caution is necessary to identify edible mushrooms from those that are poisonous.

Many excellent books regarding wild edible plants are available. One, published by the Missouri Department of Conservation, is *Wild Edibles of Missouri* (Jan Phillips).

Menu Planning

In many instances, planning a menu which includes wild foods is simply a matter of substituting wild edibles for their domestic counterparts. Venison (deer) and beaver easily replace beef in pot roast or other beef dishes. Wild turkey and domestic turkey are so similar in flavor that with proper cooking it is difficult to determine the difference. Freshwater fish provide succulent alternatives to saltwater varieties. Some desserts rely almost completely on wild berries and fruits as their flavor base.

Nutrition

Nutritional values of wild plants and animals have already been discussed, but limited research on the topic requires further consideration. Although research exists on the nutritional value of wild game, such research is limited and usually compares lean, non-marbled meat to fattier marbled counterparts. The nutritional values used may be misleading if the fat of the traditional game is left on the meat. (Additional fat and sinew in game meat contributes to the gamey taste.) For the most part, wild game can provide similar nutritional values and sometimes better value.

Occasionally, health advisories are issued for contaminated waters in Missouri. Currently, an advisory applies to chlordane in the Missouri River. To avoid health risks, you should eat fish taken from certain stretches of the river in moderation over an extended period of time. If there is question about the suitability of an animal for consumption, contact your local or regional Department of Conservation office.

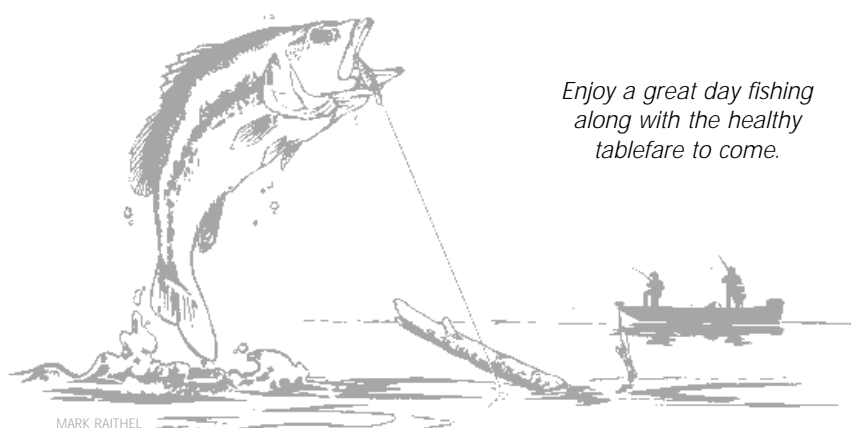
Sources of Wild Edibles

Gone are the days when pioneer women went to the marketplace and selected a variety of game or fish to prepare for the table. Today, it is illegal to sell any fish or wildlife taken under a sport hunting or fishing license in Missouri. Commercial licenses exist for fishing the Missouri, Mississippi and St. Francois Rivers and apply to the sale of certain species of river fish. Furbearer carcasses such as raccoon, opossum, beaver and muskrat can also be sold, provided they are taken under legal conditions.

Any hunter, fisherman or trapper may give all or part of their harvest to another individual, given the animals donated were included in the daily limit of the person who caught them.

The best way to obtain wild fish, fowl and game is to harvest them yourself through hunting, fishing or trapping within the guidelines of the *Wildlife Code of Missouri*. Not only will the menu be enhanced, but you will enjoy a certain amount of pride and satisfaction from catching, preparing and eating the wild foods.

Some plants that provide native wild foods can be included in your home landscape and garden, to provide food for the family as well as increase wildlife values. Persimmons, paw paws, berries and nuts can be enjoyed by all the residents in and around the home.



LESSON PLAN VI

CONSERVATION FOR FAMILY AND CONSUMER SCIENCES

FOODS AND NUTRITION—Wild Edibles

MATERIALS

Several wild game and wild edible cookbooks
Overhead projector and screen
Student Handout 3
Transparency Master 13
Assignment Sheet 8
Bulletin board supplies

OBJECTIVES

After completing this lesson the student should be able to:

1. Plan a meal that includes a game animal or wild plant as part of the menu.
2. Discuss advantages and disadvantages of using wild edibles.
3. Identify two sources of wild edibles.

METHOD

Illustrated lecture
Menu planning
Discussion
Group assignment

PROCEDURE

I. Introduction

- A. Display cookbooks and recipes and invite students to preview them.
- B. Ask if any students have eaten wild foods and have them share their experiences with the class.

II. Presentation

- A. Wild edibles play only a minor role in most people's diet.
 1. Can provide additional flavor
 2. Some are nutritionally superior to domestic foods.
- B. Game mammals can be as tasty as domestic ones if properly prepared.
 1. Proper cleaning includes removal of glands and visible fat from carcass.
 2. Soak overnight in salted water or a marinade, then prepare for cooking.
- C. Gamebirds can be substituted for domestic poultry.
 1. Upland game birds (turkey, quail)
 2. Waterfowl (ducks, geese)
- D. Fish provide health benefits.
 1. Low cholesterol and caloric content
 2. High nutritional value
- E. Edible plants provide ways to enhance the menu.
 1. Edible plants are readily obtainable but care should be exercised to avoid non-edible or poisonous ones.
 2. Distribute **Student Handout 3 (Wild Menu)**. Display **Transparency Master 13** to begin a discussion on menu ideas.
- F. Divide the class into groups and have each group plan a menu that includes several wild edibles.
 1. Discuss sources of wild edibles
 - a. Donated by legal hunters, anglers and trappers (donations must still be included in the daily limit)
 - b. Some fish species can be purchased directly from commercial fishermen, others can be purchased at stores offering pond-raised varieties.

LESSON PLAN VI

CONSERVATION FOR FAMILY AND CONSUMER SCIENCES

- c. Legal furbearer carcasses may be purchased from trappers.
- d. Harvest your own meat within guidelines of the *Wildlife Code of Missouri*.
- 2. Have students complete **Assignment Sheet 8**.
- 3. Have students prepare one of the menu items (optional).

III. Summary

- A. Share the menus with the other class groups and vote on categories, such as the most interesting, funniest, most likely to be eaten by a football player, etc.
- B. Have students display their menus on a bulletin board titled “Wild About Nutrition” or combine their meals into a restaurant menu.

Name: _____

Point Value: _____

Points Earned: _____

WILD MENU

Friday Fun Night is approaching and you are in charge of the food. The theme is “Wild About You,” so you have decided to include some wild edibles in the menu. In the space below plan your menu, list where you would find the items and how you would prepare them.

Wild About You Restaurant



Wild *About You* RESTAURANT

Entrees

Hasenpfeffer for Two
Venison Roast
Duck a'la Orange
Brunswick Stew
Fresh Trout
Catfish

Salads

Dandelion Salad
in a Shepherd's Purse
Watercress

Side Dishes

Fried Wild Onions
Wild Mustard

Appetizers

Dandelion Fritters
Morel Mushrooms

Desserts

Blackberry Pie
Gooseberry Pie
Wood Sorrel Pie
Pecan Pie
Walnut Pie

Breakfast

Poached Eggs
*Our conservation agent
won't even touch these!*

Beverages

Sassafras Tea
Ginseng Tea
Chicory

MARTHA DANIELS

Missouri Department of Conservation

Wild Menu

by Ramon D. Cass



Since man first walked on Earth, wild plants have been used for his betterment. American Indians depended largely on berries, roots, bark and leaves as food, dyes and shelter. People still drink the sassafras tea to supposedly thin out the blood after a long winter. Wild ginseng and other herbs are collected from damp woods in spring to supply foreign herb markets.

Even today, some people believe that if they wear parts of plants that resemble certain parts of the human body, those parts will be healed. These oddly shaped segments of plants, called amulets, are usually worn around the neck.

✧ In early times, plants were tested for edibility by nibbling various portions. This method is not recommended, and only specified plants listed in reputable references should be eaten. Before you begin sampling wild plants, familiarize yourself with those parts of plants that are edible and know which plants are poisonous.

The Mandrake or Mayapple plant is poisonous; however, the mature fruit is edible. Mayapple juice makes a tasty summer drink. Root stocks of other plants may be edible in the spring or fall because their food is still stored in this part. In some plants, leaves and stalks are edible when young because these portions are tender and food is being transported to these regions of the plant.



Some sour or bitter plant parts are edible only after boiling. Starchy root stocks can be boiled, dried and powdered to make bread, soup, gravies or mashed potatoes. Included in this starchy root category are cattail root, Jack-in-the-pulpit root and green dragon root. Cattail root may be eaten without boiling, but Jack-in-the-pulpit and green dragon roots must be boiled before preparing since fine acid crystals must be dissolved before they are safe to eat.

Salads may be prepared from the young leaves of the dayflower, dandelion, purslane and watercress. Cooked shepherds' purse, wild mustard and goatsbeard are very tasty. This type of dish is prepared as a vegetable or side dish and provides a nutritious diet for survival.

✧ Mature edible fruits can be found in the field from late spring to early fall. Some of these fruits are blackberry, dewberry, raspberry, currant, gooseberry, pawpaw, hickory nuts, walnuts, hazel nuts, pecans and acorns from the white oaks. These fruits make tasty dishes such as gravies, jellies, drinks, breads and marmalades.

The challenge and excitement comes with the preparation of a tasty dish. Different parts of plants may be prepared in different ways to bring out the flavor. Assuming that you have familiarized yourself with the more common herbs and shrubs of the state, the following partial list of edible wild plants in

Missouri may be helpful in preparing meals.

Some sources of information about wild plants recommended for eating are: *Wild Edibles of Mis-*

souri, by Jan Phillips; *Missouri Wildflowers*, by Edgar Denison; *Edible Wild Plants*, by Oliver P. Medsger; *Using the Wayside*, by Nelson Coon; *Survival Book*, by P.H. Nesbitt; *Living Off the Country*, by Bradford Angier.

✧ FOR SALADS

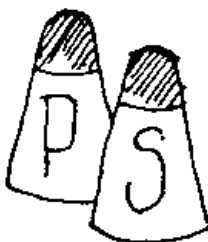
Adder's tongue: bulbs and leaves
Cattail: roots
Chicory: young leaves and stems
Corn salad: leaves
Dandelion: young leaves
Goatsbeard: leaves and stems
Greenbrier: new shoots
Purslane: leaves and stems
Shepherd's purse: leaves
Sorrel (sour grass): leaves
Spiderwort: leaves and stems
Watercress: young leaves and stems
Wild mustard: young tips

✧ FOR A TASTY BEVERAGE

Chicory: grind roots for coffee.
Cinquefoil: leaves for tea.
Dandelions: grind roots for coffee; boiled leaves yield beverage.
Kentucky coffee tea: roast and grind seed for coffee substitute.
Mandrake: squeeze mature fruit in container for summer drink.
Sassafras: for tea, pour boiling water over split pieces of root with bark.
Spice bush: dry leaves, fruit and twigs for tea. Dry and powder berries for allspice.
Wild strawberry: tea from leaves or eat raw or cook berry.

✧ TO PICKLE

Eastern redbud: green, tender pods; or fry buds, flowers and young pods in butter.
Evening primrose: root; or cook root.
Solomon's seal: root stock; also cook and parboil.



✧ TO EAT RAW

Cattail: young flower stalk
Currant: ripe fruit
Dewberry: ripe fruit
Gooseberry: ripe fruit
Harbinger of Spring: root
Hazelnuts: nut (may be roasted)
Huckleberry: ripe fruit
Ironwood: seeds
Mandrake: ripe fruit
Morning glory: root
Mulberry: ripe berries
Pawpaw: ripe fruit
Plum: ripe fruit
Queen Anne's Lace: root
Raspberry: ripe fruit
Strawberry: ripe fruit
Wild garlic: bulbs
Wild grape: ripe fruit
Wild rose: petals

✧ TO BE GROUND INTO FLOUR

Cattail: root
Foxtail grass: seed
Jack-in-the-pulpit: root
Pigweed: seed
Shepherd's purse: seed
Sunflower: seed
Wild ginger: root

✧ FOR COOKING

Bedstraw: leaves and stems
Chickweed: young tips
Corn salad: leaves and stems
Dock: young tips
Goatsbeard: root, leaves and stem
Greenbrier: young shoots
Henbit (mint): leaves and stems
Pigweed: young leaves
Pokeweed: young shoots
Purslane: leaves and stems
Shepherd's purse: leaves and stems
Solomon's seal: young shoots
Spring beauty: boil roots in salt water; leaves and stems
Wild mustard: young tips

✧ AS SAUCE

Blackberry: cook berries
Blackberry: ripe fruit
Chokeberry: ripe fruit
Crabapples: ripe fruit
Currant: cook berries
Dewberry: cook berries
Elderberry: ripe berries
Gooseberry: cook berries
Hawthorn: ripe fruit
Mulberry: cook berries
Plum: ripe fruit

Raspberries: cook berries
Service berry: ripe fruit
Strawberry: cook berries
Wild grape: ripe fruit
Wild rose: petals



✧ MUSHROOMS

Mushroom collecting is a popular pastime among many Missourians. The beginning mushroom hunter should first learn the common edible mushrooms and the basic difference between edible and poisonous mushrooms.

Although there are more than a dozen safe, edible mushrooms to be found in Missouri, we recommend for safety that only the morel, beefsteak and puffball be collected for the table. The others too often resemble deadly species.

Mushroom collecting time usually occurs in middle to late spring when the soil is warm and damp and sufficient rains have fallen to initiate growth of the life-producing spores. One of the best times to look for mushrooms is just after a rain.

Various species may be found through summer and into early fall. Mushrooms grow individually on the ground, in colonies or on dead or dying plants. Occasionally mushrooms grow in a circular pattern on the forest floor such as the fairy ring mushroom.

The following list contains some of Missouri's edible mushrooms and time of their appearance.

1. Beefsteak mushroom: after rains, midsummer to early autumn.

2. Coral mushroom: summer and autumn.
3. Elm mushroom: cluster on tree trunk, early fall.
4. Fairy ring mushroom: early summer through autumn.
5. Hedgehog mushroom: on tree trunk, summer and autumn.
6. Inky cap mushroom: summer and autumn.
7. Meadow mushroom: August to October.
8. Morel mushroom (sponge): May to June.
9. Orange milk mushroom: summer and autumn.
10. Oyster mushroom: after rains, midsummer to early autumn.
11. Puffball: select only white variety which is firm. Peel, slice and fry.
12. Shaggy mane mushroom: summer and autumn.
13. Small or early ink mushroom: spring through autumn.
14. Sulphur mushroom: midsummer to frost.

Be sure each mushroom is edible before you pick it. Do not mix various species of mushrooms during collection. Small, tender mushrooms may be cleaned, fried and prepared with a variety of meats or may be made into sauces or soups. The leathery varieties may be sliced thin, rolled in crumbs and baked or formed into a loaf and baked.

Survival in the wilderness may be necessary at some time. But even if catastrophe doesn't strike, it's satisfying to know that you are capable of living off the land.

For good mushroom references check your local library or bookstore.

2:90





LISA HERIGON

Clothing and Textiles

CLOTHING AND TEXTILES

Learner Expectation:

Students will compare the advantages and disadvantages of natural and synthetic fibers and identify conservation measures and environmental impacts when purchasing or disposing of goods.

CHAPTER STANDARDS		PERFORMANCE OBJECTIVES	ACTIVITIES	IDEAS
Performance	Knowledge	1. Identify textiles produced from renewable and non-renewable resources.	Assignment Sheet 9. Clothing Origins	@ Use the Internet to search for clothing, fabric and fiber origins.
1.1	CA1	2. Explain the relationship between natural fur and wildlife resources.	Transparency Masters	
1.2	CA3		14. Carrying Capacity	
1.4	CA6		15. Fiber	
2.3	CA7		Characteristics	
3.1	MA1		16. Energetic Elaine	
3.2	SC8	3. Compare the advantages and disadvantages of natural and synthetic fur.	Student Handout	
3.8	SS6		4. Care of Fur	
4.1				
4.2		4. List three ways to save energy when doing laundry.		
4.3				
		5. Define <i>carrying capacity</i> and <i>eutrophication</i> .		

Clothing and Natural Resources

Missouri's social and environmental climates make clothing a necessity; it is used to protect and adorn our bodies and is made from a variety of fabrics and textiles. Fabrics and textiles are also used to furnish and decorate homes, often increasing the home's comfort and efficiency. Since these materials are produced from natural resources, clothing and textile choices affect the availability of natural resources and vice versa.

Natural Versus Synthetic Textiles



LISA HERIGON

Natural textiles include wool from sheep, as well as cotton, linen (flax), silk, leather and fur.

Natural textiles are those which are made from plants or from the hair or skin of animals. They include cotton, linen (flax), silk, wool, leather and fur. Some commonly used synthetic fibers are nylon, rayon, acetate, acrylic, vinyl and polyester. Synthetic fibers are usually made from chemicals. It is important to note some chemicals are derived from natural, renewable resources. Rayon is produced from cellulose found in plants; however, the cellulose is dissolved, forced through fine spinnerets and then solidified into filaments.

In general, natural fabrics tend to absorb moisture and allow air to reach the skin providing comfort in winter and summer, but usually require special care to maintain their quality. Synthetic textiles generally require minimum care with individual advantages and disadvantages.

Renewable and Nonrenewable

Textile products are made from both renewable and nonrenewable resources. In general, natural textiles are produced directly from renewable (plant and animal) resources. Most synthetics are produced from nonrenewable resources including petrochemicals. A new generation of synthetics are being processed from recycled plastics and nylons. These products have the potential to reduce solid waste as consumer acceptance and demand for them grows.

Fur is an example of a fiber directly related to the wildlife resource, and is available in both natural and synthetic forms. Today's modacrylics are soft and flexible and frequently used as an alternative to real fur. Genuine fur, however, possesses a quality and texture difficult to duplicate with artificial fibers.

Natural fur is a resource that many individuals misunderstand. Unregulated harvest and poaching has threatened wildlife in the past and is still a problem today, especially in some undeveloped nations. Regulated harvest of wildlife, through conservation measures, has never led to the endangerment of a species.

Fur is obtained from surplus wildlife resources through managed hunting and trapping or from animals raised on ranches. The methods of harvest are strictly regulated to provide humane treatment of the animals and to make use of the surplus population of a renewable natural resource. In many cases, animals must be removed to keep the population in balance with the habitat and prevent environmental damage caused by overpopulation. Harvesting the surplus wildlife maintains a healthy population within the carrying capacity of the habitat and allows the excess to be used beneficially by humans.

People who choose to wear genuine fur should not be criticized or harassed by individuals with different preferences. This conflict between emotion and conservation is best left to individual preference with tolerance and respect for the opposite opinion.

Durability

Durability is the ability of a fabric to withstand wear and tear with repeated use. Numerous charts exist for the characteristics, including durability, of natural and synthetic fabrics, but seldom include leather and fur. Leather and fur are quite durable; however, reasonable steps must be taken to maintain their quality. Damaged fur garments are expensive to repair but may be remodeled by a good fur designer or stylist into fashionable apparel at much less cost than a new garment.

Ease of Care

Synthetic fibers, for the most part, produce garments that are easily cared for. Most natural fibers require special treatment, especially fur and leather. Cotton is easy to care for, but it wrinkles easily. For these reasons, natural and synthetic fibers are often combined to take advantage of the benefits of both. These blends provide both easy care and durability.

Care of Garments

The durability of a garment also depends on the proper care of the clothing. The appropriate time to make this choice is during the purchasing process, whether it be for the fabric or the finished garment. With proper care, any garment will provide the wearer with comfort and style for a reasonably long time. Reading and following care labels is well worth the effort to maintain nice clothing. Extending the life of garments will reduce the need for replacement purchases and curtail resource waste. Outdated but well-maintained clothing can be donated to a charitable organization, sold at a reduced price through rummage sales, recycled into other articles or altered to meet new design trends.



Blends of natural and synthetic fibers provide easy care and durability.

Laundry

Laundry represents a sizable investment after the purchase of apparel. With proper laundering, clothing should last for several years. Garment care labels provide the information needed for proper laundering to maintain the appearance and durability of clothing and household textiles.



Check laundry product labels for content and consumer information.

HOUSEHOLD TIPS

Use borax instead of bleach.

Wash clothes in cooler water. Unless dealing with oily stains, warm and cold water should clean your clothes well. Switching your temperature setting from hot to warm can cut a load's energy use in half.

ENVIRONMENTAL IMPACT

Laundering garments usually requires the use of detergents and other chemicals which may have adverse effects on the environment. Detergents are synthetic cleaning agents made from chemical compounds rather than from fats or lye (as in soaps). Phosphates added to detergents increase their cleaning ability but they have come under attack because of their potential for producing algal growth in lakes, rivers and streams. This phenomenon is called eutrophication, which is an abundance of minerals and organic nutrients in a body of water. Eutrophication causes a reduction in dissolved oxygen. The growth of algae becomes too great and plants die due to overcrowding and reduced sunlight. Bacterial decomposition of these plants uses up oxygen in the water. Thus, excessive eutrophication destroys the ecological balance of lakes and streams.

The detergent industry has reduced the amount of phosphates in detergents by one-half to one-third since 1970, but many of the replacement chemicals do not perform quite as well in the laundry process or they contribute to the degradation of the fabric and notions. Consumers often add bleaches, stain removers, softeners and other chemicals to wash water to improve cleaning results. These chemicals are also added to the environment and must eventually be removed before the water is used elsewhere.

The amount of energy used in the laundry process is a cause for concern. Water must be heated in most cases to provide maximum cleaning power. The drying process also requires additional energy use and the energy efficiency of the washers and dryers should be taken into account when purchasing these appliances. If the garment must be ironed, additional energy use is added to the laundry bill.

ALTERNATIVE METHODS

In some instances, garments can be worn more than once between laundering if they are aired overnight and not actually soiled. Clothing must be cleaned, although the environmental problems can be reduced by proper care and prompt attention to the process. Soaps can be substituted for detergents when feasible. Soaps do not pose the environmental hazards of detergents. Laundry products with reduced phosphates may prove effective but other chemicals, such as bleaches, stain removers and fabric softeners, may need to be

added to produce a satisfactory end result. The best procedure is to measure and use only the recommended amount of detergent, additives and water for the type and amount of the load being laundered.

Energy use in the laundry can be reduced by using the coolest water setting appropriate for the clothing and by not overloading the machine. At the same time, maximize efficiency and economy by washing and drying full loads rather than partial ones. Use cold water for the rinse cycle. When possible, hang clothes on a clothesline to dry avoiding the heat of the dryer. Never over-dry laundry and remove it promptly to avoid wrinkles and additional ironing.

Special Handling of Fur

Most garments can be cleaned through normal laundry or dry cleaning processes. Fur requires special handling, but is seldom included in the variety of references available for fabric care. Maintaining the quality of fur is not difficult and is discussed here in more detail.



ELAINE CALLAWAY

*With special care, fur garments
will stay beautiful for years.*

CLEANING

Fur garments require professional cleaning using a method specific for the textile. Few standard dry cleaners are able to perform this service, but most are able to send the garment to a professional fur and leather cleaner for special treatment.

Fur can be freshened at home by placing it in a large cloth bag, then putting it in the dryer on the air or fluff setting. Fold the garment so the fur is on the inside and be sure to use only the air setting (no heat) for 15-30 minutes. This can be followed by a procedure called glazing. Dip a soft brush in water and gently brush the top hair. Dampen only the top hair and take care not to let the water go into the skin. This process renews the gloss of the fur and gives it a brighter appearance.

STORING

Fur should be stored in fine mesh cloth or paper garment bags, never in plastic. Fur needs freely circulating air to prevent the skin from drying and the hair from being broken or crushed. Allow enough storage space for the fur to breathe. Hang furs on a broad-shouldered or padded hanger and store in the coolest closet available.

In the off-season, garments should be stored under controlled temperature and humidity conditions to prevent unnecessary stress on the fibers and drying of the leather. Many dry cleaners will store furs in temperature- and humidity-controlled vaults at little or no cost. If fur is kept at home, it should be stored in a closet on the main floor. Usually, basement closets are too damp and upstairs closets are too warm.

Years ago, it was common to place furs in moth balls to protect them from moths and carpet beetles. With today's modern heating and air conditioning this is no longer a great problem. Moth balls or other chemicals will only damage the fur and the aroma may be impossible to remove. Even cedar odors will eventually be transferred to fur, so store it with care.



CLIFF WHITE

Recycling textiles helps reduce the 3 million tons that are buried in landfills each year.

Recycling Textiles

The sewing room is one of the best places to recycle textiles. One of the oldest traditions for recycling old clothes is to sew a quilt from pieces of the original garment. Some clothing can be restyled when hemlines and other fashion elements change, or can be reused to make accessories, such as scarves and purses. Doll clothes or other craft projects provide additional avenues for recycling outdated but still usable materials and notions.

Clean, well-kept clothing can be donated to charity organizations or sold at reduced prices. Some companies purchase used clothing, such as jeans, which they repair, restyle and resell to consumers. Clothes that are too worn can be used as rags to clean up messes around the home or as bedding for pets.

In addition, some recycling centers will accept natural fiber textiles which are unraveled and respun into yarn for weaving or knitting. Other textiles are sorted and sent to other countries as used clothing or chopped up and used to make items such as blankets. With a little thought and effort, there are many ways to recycle or reuse these materials to prevent them from becoming part of the 3 million tons of post-consumer textiles that end up in landfills each year.

LESSON PLAN VII

CONSERVATION FOR FAMILY AND CONSUMER SCIENCES

CLOTHING AND TEXTILES—Using Natural Resources

MATERIALS

Samples of different natural and synthetic textiles

Assignment Sheet 9

Transparency Masters 14-16

Overhead projector and screen

Student Handout 4

OBJECTIVES

After completing this lesson the student should be able to:

1. Identify textiles produced from renewable and nonrenewable resources.
2. Explain the relationship between natural fur and wildlife resources.
3. Compare the advantages and disadvantages of natural and synthetic fur.
4. List three ways to save energy when doing laundry.
5. Define carrying capacity and eutrophication.

METHOD

Illustrated lecture

Activity

PROCEDURE

I. Introduction

- A. Why do we need clothing?
 1. Protection from weather conditions
 2. Social expectations
- B. Where do we get clothing?
 1. More than from stores
 2. Ultimately, from natural resources

II. Presentation

- A. Natural and synthetic textiles are available.
 1. Natural textiles stem from renewable resources.
 2. Synthetic textiles generally come from nonrenewable resources.
- B. Show samples of different textiles and trace their origin to renewable or nonrenewable resources.
- C. Have students identify textiles they are wearing (including belts, shoes and accessories) and trace their origins using **Assignment Sheet 9**.
- D. Fur is available in either natural or synthetic forms.
 1. Synthetic fur comes from petrochemicals.
 2. Natural fur comes from animals.
 - a. Taken from surplus wildlife resource
 - i. Harvest methods strictly regulated
 - ii. Humane methods used
 - iii. Helps maintain healthy wildlife population within the carrying capacity of the environment (**Transparency Master 14**).
 - b. Raised on ranches.
- E. Proper textile care maintains durability. Show **Transparency Master 15**.
 1. Synthetics require easy care but have fairly low durability.
 2. Natural fibers require special care but have high durability.
 - a. Fur requires special treatment. Use **Student Handout 4**.
 - i. Avoid drying skin
 - ii. Prevent breaking hairs
 - b. Do not use mothballs with fur.

LESSON PLAN VII

CONSERVATION FOR FAMILY AND CONSUMER SCIENCES

3. Blends provide the best of both durability and ease of care.
- F. Laundry has an impact on the environment.
 1. Negative impacts from detergents and additives
 - a. Phosphates can cause eutrophication.
 - i. High algae growth
 - ii. Bacterial decay reduces oxygen available.
 - b. Chemicals added directly to water supply must be removed later.
 2. High energy requirements are also of concern.
 - a. Heated water is necessary to improve cleaning.
 - b. Drying and ironing processes also use heat.
 3. Reduce energy impacts.
 - a. Use coolest setting that will work for soiled clothing.
 - b. Check energy guide stickers on machines before purchasing and use energy efficient machines.
 - c. Do not overload or underload the machine.
 - d. Remove from dryer promptly to avoid ironing.
 - e. Use clothesline to dry.
 4. Use laundry alternatives.
 - a. Use minimum amounts of detergent, bleach, additives and fabric softener to get the job done.
 - b. Treat stains promptly.
 - c. Air garments if they are not soiled.
 5. Use **Transparency Master 16** to summarize laundry impacts.

III. Summary

- A. Even our clothing comes from natural resources.
- B. Clothing selection and maintenance choices have an impact on the environment.
- C. Have students brainstorm ways they can personally reduce adverse environmental impacts related to clothing selection and maintenance.

Name: _____

Point Value: _____

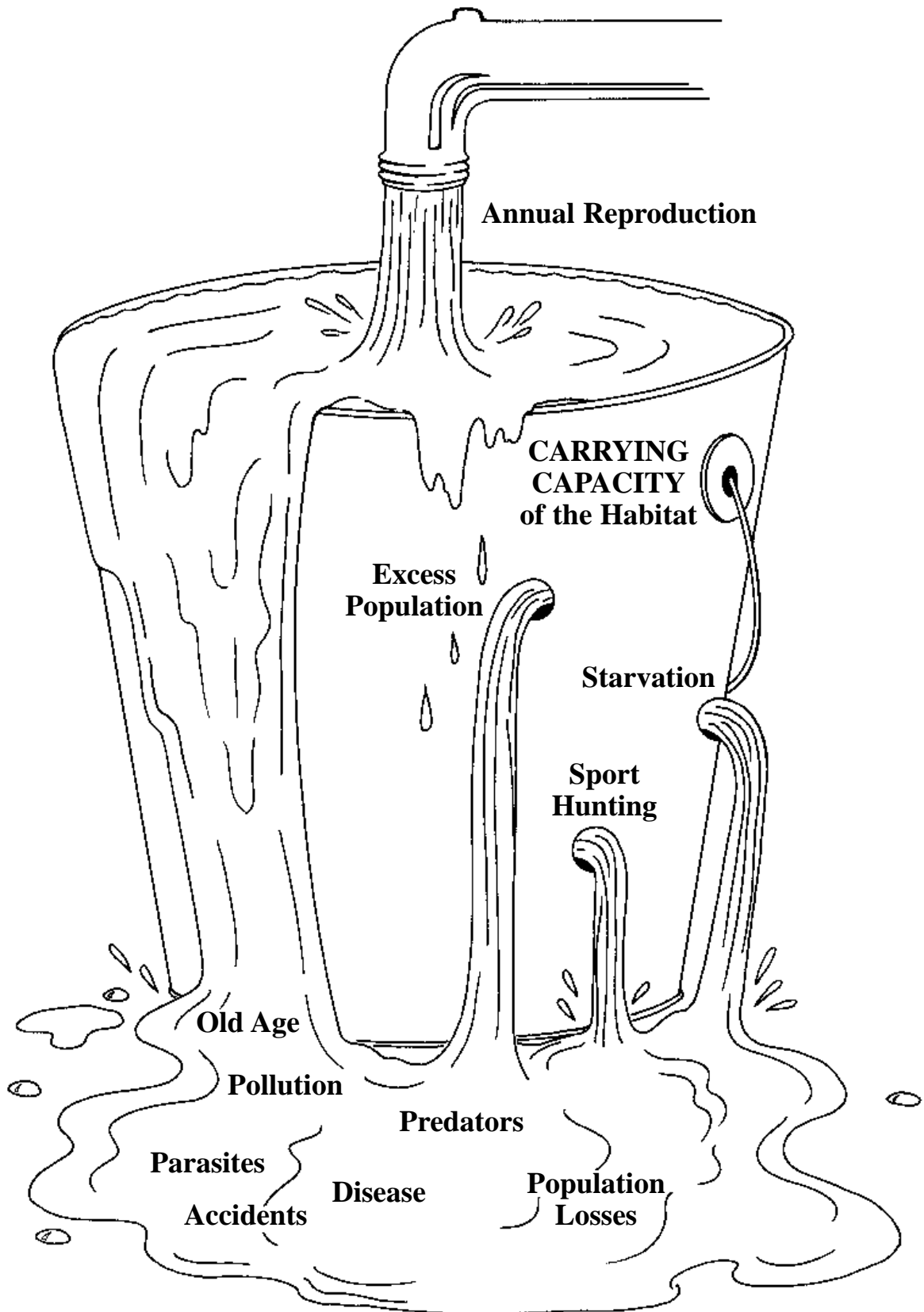
Points Earned: _____

CLOTHING ORIGINS

Make a complete list of the clothing and accessories you are wearing today or have brought to school. Trace their origin to renewable or nonrenewable natural resources.

<i>Item</i>	<i>Resource Origin</i>	<i>Renewable or Nonrenewable</i>
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

Carrying Capacity



TEXTILES

Natural		Synthetic	
Fiber	Characteristics	Fiber	Characteristics
Cotton	soft, comfortable, absorbent strong, even when wet takes finishes well wrinkles and shrinks unless treated easily laundered	Acetate	attractive silk-like look holds shape well may wrinkle and fade usually dry-cleaned
Wool	warm, retains body heat resists wrinkles naturally water repellent can shrink with heat and moisture can be damaged by moths usually dry-cleaned, sometimes washable	Acrylic	does not cause allergic reaction lightweight, yet warm blends with other fibers for added bulk resists wrinkles damaged by a hot iron dry-cleaned or laundered
Silk	natural luster soft, flexible, but strong can be damaged by perspiration usually dry-cleaned, sometimes washable	Nylon	blends with other fibers for added strength holds shape well doesn't absorb moisture washable, dries quickly
Linen	cool, absorbent strong, but stiff wrinkles and shrinks unless treated easily laundered	Polyester	resists wrinkles blends with other fibers for wrinkle resistance holds oily stains washable, dries quickly
Leather	wind and water resistant strong does not wrinkle can be suede or polished special cleaning methods required	Rayon	absorbs moisture weak when wet may wrinkle or shrink unless treated usually dry-cleaned sometimes washable
Fur	luxurious and warm maintains luster and durability can be damaged by moths some types shed if not properly maintained with care, shedding is minimal special cleaning and storage required	Spandex	excellent stretch and recovery combines with other fibers for stretchability washable, avoid chlorine bleach
		Triacetate	can be permanently pleated resists wrinkles washable

Energetic Elaine Does the Laundry



KIM WATSON

Missouri Department of Conservation

CARE OF FUR GARMENTS

Cleaning

- @ Fur should be cleaned by a professional.
- @ You can freshen your fur between cleanings by placing it in a large cloth bag and putting it in the dryer on air for 15 to 30 minutes.
- @ You can then dip a soft brush in water and gently brush the top hair. Don't allow water to get into the skin. This will renew the gloss and brighten the appearance.

Storing

- @ Never store fur in plastic. Use cloth or paper bags that will allow the fur to breath.
- @ Hang furs on wide padded hangers in the coolest closet available.
- @ In the off-season, your fur should be stored in controlled temperatures. Many dry cleaners will store furs at little or no cost.
- @ If stored at home, keep it on the main floor. Basements can be too damp and the upstairs too warm.
- @ Mothballs and cedar chips may leave odors in your fur. If furs are stored properly, these are generally not necessary.

Glossary

aerobic: Life or processes that depend on the presence of oxygen.

biodegradable: The property of a substance that allows significant breakdown of its physical and/or chemical structure by organisms.

carrying capacity: Maximum population that a given ecosystem can support indefinitely.

cellulose: A complex carbohydrate occurring in wood and all other vegetable material. Wood cellulose fibers are basic components of lumber, wood pulp and many other useful products and some fibers.

chlordane: A chlorinated, highly poisonous, volatile oil, C₁₀H₆Cl₈, used as an insecticide, especially against termites.

companion planting: Planting two or more kinds of plants next to each other. The pairs you select can produce better tasting plants or provide protection from insects.

compost: Organic residues, or a mixture of organic residues and soil, that have been piled and allowed to undergo biological decomposition until relatively stable.

conservation: Wise use of natural resources. (The criteria for wise use can be the original concept of conservation by Gifford Pinchot: "Greatest good for greatest number in the long run." "A state of harmony between man and the land . . .," according to Aldo Leopold.)

eutrophication: The aging process of lakes whereby aquatic plants are abundant and waters are deficient in oxygen. The process is usually accelerated by enrichment of waters with surface runoff containing nitrogen and phosphorus.

habitat: The environment in which the life needs of an organism, population or community are supplied.

harvest: The gathering or taking of a crop of any kind, including wildlife; that portion of gross production which exceeds the amount or number needed for reproduction during the subsequent production period and is available for consumption.

hydroponics: The growing of plants in a liquid solution which contains the necessary minerals used as food by the plants.

incineration: The disposal of solid, liquid or gaseous wastes by burning.

management: Making decisions and implementing practices which maintain a resource so it can continue to be used.

modacrylic fiber: Any of various manufactured fibers made from long-chain polymers composed primarily of acrylonitrile modified by other polymers; modified acrylic; used in making wool substitutes, carpets, synthetic fur, etc.

natural resources: The air, land, soil, water, plants, animals, minerals, sources of energy and other persons upon which and

whom a human depends for necessities, needs and wants.

nonrenewable resources: Natural resources that, once depleted, cannot be replaced. Minerals and fossil fuels are the natural resources most frequently classified as nonrenewable.

organic gardening: A system of gardening that utilizes organic wastes and composts to the exclusion of chemical fertilizers.

perpetual resources: Natural resources that are permanent, lasting or continuing for an indefinitely long time, such as sunlight or wind.

petrochemicals: Chemicals derived ultimately from petroleum or natural gas.

population: A group of organisms of the same kind.

preservation: Saving a resource by not using it.

renewable resources: Natural resources that can be replenished through natural means within the limits of human time and thus continue to remain available for further use, such as vegetation and wildlife.

restoration: The process of restoring site and/or population conditions as they were before disturbance.

spinnerets: Thimblelike devices or metal plates with tiny holes through which a solution is forced in the making of synthetic fibers.

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Rothenberger, R.R. *Making and Using Compost*. University of Missouri-Columbia Extension Division, Pub. #6956, 1987.*

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Tylka, Dave. *Landscaping for Backyard Wildlife*. Pamphlet, Missouri Department of Conservation, 1991.

* Reference is currently out of print.

Babes in the Woods (12 min.), Missouri Department of Conservation. Jefferson City, MO.

Landscaping for Wildlife (13 min.), Missouri Department of Conservation. Jefferson City, MO.

Dealing With Urban Wildlife (14 min.), Missouri Department of Conservation. Jefferson City, MO.

See page 95 for the Missouri Department of Conservation order form.

Conservation for Family and Consumer

OTHER REFERENCES

The Missouri Department of Natural Resources has several materials pertaining to household waste and composting. These are of particular use in this unit:

EDUCATION MATERIALS

Compost Learning Guide (Grades 4-8)
Recycling Study Guide
Vermicomposting: Innovative Kitchen Help
Break It Down (free loan video, Grades 4-8)

GENERAL INFORMATION

Managing HouseHold Hazardous Waste (brochure)
Easy-To-Use Water-Saving Devices
NatureScapes
Homeowners' Composting Guide (brochure)
Buying Recycled Products: Consuming Wisely (brochure)
Assorted composting flyers
Composting poster

Order in writing from:
Missouri Department of Natural Resources, P.O. Box 570, Jefferson City, MO 65102

Videos

Sciences Test

Directions: Use the listed words to complete the sentences. Write the word you have chosen in the blank. Each answer is used once.

awareness	carrying capacity	resource chain	wants
compost	conservation	eutrophication	nonrenewable
landfills	natural resources	naturescaping	restoration
preservation	recycle	renewable	

1. _____ is the wise use of natural resources.
2. _____ is the maximum population that a given ecosystem can support indefinitely.
3. When you _____ a product, the natural resources can be used in new products.
4. Wild edibles are a type of _____ resource.
5. _____ is the first level of conservation.
6. We can conserve our natural resources by reducing our list of _____ and focusing on our needs.
7. _____ is a mixture of organic residue and soil that has been piled and allowed to decompose.
8. Man depends on _____, such as air, minerals and energy.
9. A _____ depicts the path of a product from its origin.
10. Saving a resource by not using it is called _____.
11. If algae is abundant and water is deficient in oxygen, a process called _____ is taking place and can be accelerated by runoff containing nitrogen and phosphorus.
12. The Missouri Solid Waste Bill (SB 530) prohibits disposal of lead acid batteries, whole tires and yard wastes in _____.
13. Planting native species in an area in an attempt to bring back original conditions before disturbance is called _____.
14. The practice of using indigenous plants is called _____.
15. Fossil fuels are _____ resources.

ANSWER KEYS

Assignment Sheet 2

Page 10

R books	R newspapers
N gold jewelry	N phosphate detergent
N gasoline	R fur coat
P wind	R rag rug
N computer diskette	R wooden clothes pin
P sunlight	N metal filing cabinet
R cotton shirt	N fake fur
R leather shoes	P flowing water
N aluminum can	R cardboard box
R fertile soil	N plastic bottle

Recyclables: Answers will vary depending upon location and logistics.

Composting: All renewable resources listed if pieces are small enough.

Sample Test

Page 93

1. Conservation
2. Carrying capacity
3. recycle
4. renewable
5. Awareness
6. wants
7. Compost
8. natural resources
9. resource chain
10. preservation
11. eutrophication
12. landfills
13. restoration
14. naturescaping
15. nonrenewable

VIDEO ORDER FORM

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shipping items back to us.

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1.	Babes in the Woods (12 min.)	VHS		
2.	Landscaping for Wildlife (13 min.)	VHS		
3.	Dealing with Urban Wildlife (14 min.)	VHS		
4.				
5.				

Make a copy of form and keep original for future use.

